

## **Appendix G14**

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### **2017 Wildlife Screening Level Risk Assessment**

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MEADOWBANK GOLD PROJECT

**2017 Wildlife Screening Level Risk Assessment**

In Accordance with NIRB Project Certificate No.004

Prepared by:

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## EXECUTIVE SUMMARY

A wildlife screening level risk assessment (WSLRA) was conducted to evaluate risk to local wildlife from dietary ingestion of chemical contaminants during operation of Agnico Eagle's Meadowbank mine.

The general approach and methodology of this assessment are based on those presented in the risk assessment of baseline conditions (Azimuth, 2006), using samples of soil, water and plant tissue collected onsite, near-site, along the all-weather access road (AWAR) and at external reference locations. Exposure (estimated daily intake; EDI) was calculated from 95% UCLM concentrations in environmental media for each location, and toxicity reference values (TRVs) were developed from lowest-observed adverse effect levels (LOAELs) from the literature. TRVs were the same as those used in previous assessments.

HQ values were calculated as:  $HQ = EDI / TRV$ . Risk was characterized as negligible when  $HQ \leq 1$ .

Key findings were as follows:

- Risk to ungulates (caribou), small mammals (northern red-backed vole), and waterfowl (Canada geese) was found to be negligible ( $HQ < 1$ ) for all COPCs in all locations.
- Potentially unacceptable risks to songbirds from chromium ( $HQ > 1$ ) were identified for all locations, which is consistent with all previous assessments (baseline, 2011, 2014). HQ values exceeded 1 for onsite, near-site, AWAR, and external reference locations, indicating that risk from this COPC is not elevated as a result of mining activities. Chromium is naturally elevated in ultramafic rock, which is common in the region.
- All 90<sup>th</sup> centile concentrations of COPCs in soil samples collected onsite were lower than values measured during the baseline (pre-construction) assessment except beryllium, for which a minor increase of 13% (0.5 to 0.57 mg/kg) was observed.

Overall the operation of the Meadowbank mine does not appear to be contributing excess risk to wildlife via dietary uptake of chemical contaminants.

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# 1 INTRODUCTION

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## 1.1 BACKGROUND

In 2010 Agnico Eagle Mines Ltd. (Agnico Eagle) began operation of the Meadowbank Gold mine, near Baker Lake, Nunavut, after purchasing the rights from Cumberland Resources Ltd. Prior to the purchase, Cumberland contracted Azimuth Consulting Group Inc. to prepare a pre-construction wildlife screening level risk assessment (SLRA), to assess potential risks to wildlife via dietary uptake of mine-related contaminants (Azimuth, 2006).

Specifically, the pre-construction SLRA focused on determining the contaminants of potential concern (COPCs) from predicted minesite activities, evaluating potential risks to wildlife from exposure to contaminants under baseline conditions, and determining the magnitude of increase in contaminant exposure required to cause concern for wildlife populations. Preliminary estimates of post-development contaminant concentrations were then obtained from models, and based on those potential future changes, expected potential risks to local wildlife were evaluated.

The pre-construction SLRA included 18 metals as COPCs. Under baseline conditions, negligible risks were found for all COPCs except chromium, which was determined to pose an improbable but potential risk for songbirds at baseline concentrations. COPC exposure concentrations were not expected to increase during operation, so potential risks were not expected to change from baseline conditions.

As required under the Nunavut Impact Review Board Project Certificate (Condition 67), the WSLRA was updated in 2011 and 2014 to assess potential risk during mine operation. Results were comparable to those presented in the baseline assessment, and operation of the Meadowbank mine did not appear to be contributing significant incremental risk to wildlife from consumption of chemical contaminants. As per Condition 67 and as outlined in the Terrestrial Ecosystem Monitoring Plan (Cumberland, 2005), monitoring was conducted again in 2017.

## 1.2 GENERAL APPROACH

While the goal in the baseline WSLRA was to determine whether there were potential risks to wildlife from the identified COPCs under baseline and projected future site conditions, the aim of this assessment is to characterize risk under current (operational) conditions. In particular, this assessment aims to distinguish risk due to operation of the mine from risk due to background conditions by taking soil and vegetation samples at onsite, near-site, all-weather access road (AWAR) and external reference locations. The general approach is the same however, and includes the common risk assessment components of problem formulation, exposure assessment, hazard assessment and risk characterization

This report follows a hazard quotient approach using food-chain modeling developed by Azimuth Consulting Group Inc. for the baseline wildlife screening level risk assessment (Azimuth, 2006). The risk assessment framework used by Azimuth was taken from various Canadian and American sources (Environment Canada, 1994; CCME, 1996; BCE, 1998; US EPA, 1992, 1998). All methods as described in that document are summarized here. Each component has been examined to ensure relevance to current site conditions, and details of any changes are described. The exposure assessment stage was updated with field data collected in 2017. Toxicity reference values (TRVs) were compared to those used in a similar risk assessment in the Kiggavik region (Senes, 2008) and

published databases. Hazard quotients were re-calculated based on the data collected in 2017 and assumptions of the risk assessment are discussed.

## **2 PROBLEM FORMULATION**

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### **2.1 SITE DESCRIPTION**

The Meadowbank site is located 70 km north of the hamlet of Baker Lake, Nunavut, near the border of the Northern and Southern Arctic ecozones. Terrain in the Meadowbank area is typical barren-ground subarctic, with low-growing vegetation in poorly developed soil with continuous permafrost. The landscape is dominated by many interconnected lakes and isolated ponds with indistinct drainage patterns. Topography consists of rolling hills, boulder fields and bedrock outcrops. The mine site is located at the headwaters of the Quioch River system, which flows southeast through Chesterfield Inlet into Hudson Bay. Lakes in this region are ultra-oligotrophic, with low productivity levels. This region supports few terrestrial mammals (15 species) and birds (62 species) (Azimuth, 2006). Migratory species (primarily caribou and Canada geese) are present.

### **2.2 MINING ACTIVITIES**

The Meadowbank project consists of several gold-bearing open-pit deposits (Portage, Goose, Vault and Phaser pits). Much of the infrastructure is located in close proximity to the mill and mine facilities, with the exception for the Vault and Phaser Pits which are approximately 10 km northeast of the site.

Waste rock from the Portage and Goose pits are stored in the Portage Rock Storage Facility (PRSF). During the construction period, non-potentially acid generating rock (NPAG) was used for dikes and roads with excess used as cover material in the PRSF. Potentially acid generating (PAG) waste rock is sent to the Portage waste rock area. The Portage Rock Storage Facility is constructed to minimize the disturbed area and will be capped with a layer of non-acid-generating rock. Waste rock from the Vault Pit will be stored in the Vault Rock Storage Facility. Mined ore is either processed in the mill or stockpiled for eventual processing.

Tailings are stored in the Tailings Storage Facility (TFS), defined by the series of dikes built around and across the basin of the dewatered northwest arm of Second Portage Lake. Tailings water is reclaimed for use in ore processing.

Much of the construction activity since the previous assessment (i.e. in 2015 - 2017) was related to increasing the level of the Central Dike to 143 masl and finalizing structures for Saddle Dam 3 and 4. The Phaser Lake area was prepared for mining beginning in 2016, including dewatering and fishout, with operations starting around November 2017. Construction of a 64 kilometers exploration road between the Meadowbank site and the Amaruq exploration project was started in 2016 and completed in 2017.

## 2.3 BASELINE CONDITIONS

For the 2005 pre-construction WSLRA, baseline concentrations of COPCs were screened against CCME surface water guidelines for the protection of freshwater aquatic life, or soil quality guidelines for the protection of environmental and human health. If a guideline value was not published for freshwater aquatic life, the most conservative value for other land uses was applied.

It was found that baseline concentrations of metals in the project lakes were below CCME guidelines, except for cadmium and mercury. However it should be noted that cadmium was not detected in the project lake samples, but the detection limit was above the CCME guideline (adjusted for hardness). Similarly, while mercury was not detected in the project lakes, the detection limit (50 ng/L) was above the CCME guideline (26 ng/L).

Soil samples from the project area were screened against the most conservative CCME soil quality guidelines for the protection of environmental and human health (typically agricultural use criteria). Under baseline conditions, concentrations of arsenic, chromium and nickel exceeded their CCME guidelines of 12, 64, and 50 mg/kg, respectively, in 10, 17 and 9 out of 26 samples, respectively. Soil pH was below the CCME guideline of 6-8 in 37 of 50 samples (See Section 2.3.2, Azimuth, 2006).

The initial WSLRA (Azimuth, 2006) predicted negligible risks (HQ<1) under baseline conditions for all contaminants of potential concern (COPCs) with the exception of chromium for songbirds. While the HQ value for beryllium also exceeded 1, the risk for populations was assumed to be negligible because the TRV was NOAEL-based and the exceedance was marginal. Predictions for future operational conditions indicated no increased risks relative to baseline.

## 2.4 SOURCES OF CONTAMINANTS

Major mine site operations and their potential to contribute to COPCs (based on Azimuth, 2006) are summarized here. No new potential sources of COPCs were identified.

*Open pits* – Currently, mining of the Portage, Goose Island (completed March 2015), Vault and Phaser pits is underway. Along with ore, pits produce waste rock, which may contribute to COPCs through dust emissions.

*Rock storage facilities* – The North Portage and Vault rock storage facilities are currently in use. Waste rock (not containing ore) is moved to these areas. Dust may be blown from the rock piles during dumping and vehicle traffic during transport of material. Seepage from rock storage facilities is controlled in sumps and pumped back to the reclaim pond.

*Borrow pits and quarries* – Borrow pits and quarries were used for the construction of mine site roads and the airstrip. The COPCs for borrow pits and quarries are similar to open pits. Currently, there are no active borrow pits or quarries (material is borrowed and crushed for road maintenance from open pit operations).

*Tailings Storage Facilities (TSF)* – The northwest arm of Second Portage Lake was partitioned off by the East Dike and de-watered from 2009 to 2012. The northwestern portion of this area was further partitioned by the Stormwater Dike, and is used for storage of tailings. The Stormwater Dike created the North and South Cell TSF. The North Cell was completed in 2015. Prior to 2013, much of the TSF had water cover or was covered by snow for most of the year; in 2013 and 2014, areas of the TSF had exposed tailings beaches. Although permafrost is expected to freeze the tailings, the material is fine-grained and could be a source of dust emissions during dry periods.



*Roads and airstrip* – Frequently used gravel haul roads run throughout the mine site to connect pits, waste rock storage and processing facilities. An airstrip, receiving approximately 4 planes per week, was built at the mine site to receive deliveries and personnel. Dust from these sources could be a potential source of contaminants. A 110 km long all weather access road (AWAR) was constructed between the mine and the Hamlet of Baker Lake, using gravel from quarries along the road. Previous SLRAs did not consider dust emissions from the AWAR in sampling programs, but following concerns from NIRB of dust deposition due to road activity a new station was added in 2014 to screen for potential risks associated with roadside habitat. The station was paired with dustfall studies and was located 100 m from the AWAR at km 78, on the downwind side (see Section 3.2). Construction of a 64 kilometer exploration road between the Meadowbank site and the Amaruq exploration project was started in 2016 and completed in 2017.

*Effluent discharge* – De-watering of lakes for pit development or TSF construction is considered effluent discharge and is regulated under the current NWB Water License. Lake water is treated for suspended solids removal before discharge, and since it is an existing surface water source, it is not likely to be a source of contaminants in the receiving water. Effluent is also periodically discharged from the Portage and Vault attenuation ponds into Third Portage Lake and Wally Lake respectively, pursuant to the existing Water License and MMER requirements. The Portage Attenuation Pond is no longer in use and has become the South Cell TSF. There will be no further discharge to Third Portage Lake from the Portage Attenuation Pond. However, metals regulated under MMER were considered as COPCs in this assessment.

*Diesel generating plant, mine mill plant and associated facilities* – Three diesel generating plants provide power for the mine. The Air Quality Impact Assessment (2005) determined emission of PAHs was “very low” and did not require modeling. The milling of rock in the processing plant takes place under wet conditions, and is not a source of particulate emissions. All health and safety-related requirements to reduce particulate emissions during handling of the ore at the mine plant before processing are met, so these are not expected to be a significant source of contaminants.

Overall, roads, waste rock and tailings were determined to be the main sources potentially contributing to COPCs through dust emissions. Dewatering effluent discharge may potentially contribute to COPCs in water sources.

## **2.5 CONTAMINANTS OF POTENTIAL CONCERN (COPCS)**

In the baseline WSLRA, Azimuth (2006) identified contaminants of potential concern (COPCs) based on the chemical composition of the identified dust sources, the predicted effects of effluent on water quality in Third Portage Lake (from Golder, 2005), and a review of metals regulated under MMER (see Azimuth, 2006, Section 2.5 for details).

Projected concentrations of metals in four dust sources (roads, waste rock and tailings) that exceeded the 90<sup>th</sup> centile of baseline soil concentrations or the CCME guidelines (CCME 1999, 2001) were included as COPCs. Five metals regulated under MMER (arsenic, copper, lead, nickel and zinc) were also included in the assessment. Although mercury was not predicted to exceed baseline soil concentrations or CCME criteria, it was included because it was found to be of concern to the general public in the Arctic. All metals assessed in Azimuth (2006) were included in this assessment. CCME guidelines for tin and uranium (non-radiological) have been published since 2006, so these metals were added during the 2011 assessment.

The COPCs for this assessment are:

Antimony	Lead	Tin
Arsenic	Manganese	Uranium
Barium	Mercury	Vanadium
Beryllium	Molybdenum	Zinc
Cadmium	Nickel	
Chromium	Selenium	
Cobalt	Strontium	
Copper	Thallium	

Certain chemicals which are controlled through best management practices and which were not addressed in the baseline SLRA include petroleum hydrocarbons, process chemicals, dioxins, nitrates, ammonia and PAHs. For each source of these chemicals, best management practices are in place and environmental exposures are not expected to occur.

## 2.6 RECEPTORS OF CONCERN

The WSLRA considers four receptors of concern (ROCs): ungulates, small mammals, waterfowl and songbirds. These receptors were determined from the project's initial EIA, which included discussions with stakeholders, public meetings, traditional knowledge and experience from other mines. Specifically, the SLRA focusses 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). Receptor-specific values such as dietary preferences that are used in this assessment are further discussed in Section 3.1 (Table 3-1).

In 2017, COPCs were measured in four general locations – onsite, near-site, along the all-weather access road (AWAR) and at an external reference area. Separate characterizations were conducted for the onsite, near-site, AWAR and external reference locations for northern red-backed vole, Lapland longspur and Canada goose because these species have small territories when not migrating and would not be expected to move between the sampling areas. Onsite and near-site samples were combined for the caribou risk characterization, because it was assumed that when caribou were present they would readily move between these sampling locations. See Section 3.4 for a discussion of how residence time in each area was handled as a dose-adjustment factor.

## 2.7 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 COPCs on populations of caribou, Canada goose, Lapland longspur and northern red-backed vole.

The measurement endpoints were calculated as exposure to the COPCs through ingestion of soil, water and food items. Ingested concentrations were compared to literature-based ecotoxicological benchmarks equivalent to maximum acceptable exposure levels for each ROC. Specifically, the ecotoxicological benchmarks used in this risk assessment are lowest observable adverse effect levels (LOAELs), which are generally considered to be appropriate for determining risk at the population level (Azimuth, 2006). See Azimuth (2006), Section 3.1.4 for further discussion of the derivation of toxicity reference values (TRVs). Sample et al. (1996) provided TRVs for most of the COPCs, but values for antimony, cobalt, and thallium were obtained from other sources (see references, Appendix C).

## 2.8 EXPOSURE PATHWAYS

The following exposure pathways were investigated in the baseline assessment, and are re-examined here:

Small mammals – ingestion of plants, insects, water, soil

Ungulates – ingestion of plants, water, soil

Songbirds – ingestion of plants, insects, water, soil

Waterfowl - ingestion of plants, insects, water, soil

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 WLSRAs.

## 3 EXPOSURE ASSESSMENT

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Exposure assessment is used to calculate the dose of each COPC received by each ROC. The exposure assessment uses the food chain model developed by Azimuth (2006), and provided in Excel format. The model was developed to include the influence of COPC concentrations in exposure pathways, dietary preferences, ingestion rates and dose-adjustment factors. Estimated daily intake of each COPCs was calculated for each study area (onsite, near-site, AWAR, external reference) as:

$$EDI = [\sum (I_{w,s,f} \times C_{w,s,f}) \times BF \times T]_{\text{study}} + [\sum (I_{w,s,f} \times C_{w,s,f}) \times BF \times T]_{\text{ext ref}}$$

Where:

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

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

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

BF = biotransfer factor (absorption factor)

T = proportion of time in area

Each component is described below, and an example calculation is provided in Appendix A.

### **3.1 INTAKE OF WATER, SOIL AND FOOD**

Water, food and soil ingestion rates used in this assessment are shown in Table 3-1. All intake parameters are conservative and all values are identical to 2011 and 2014 assessments. Water and food ingestion rates are identical to those used in the baseline assessment, which were derived from USEPA (1993). Soil ingestion rates used in the baseline assessment for Canada goose and Northern red-backed vole were also maintained here (from USEPA 1993). Although Beyer et al. (1994) was referenced as the source of most soil ingestion rates in the baseline assessment, the species chosen to represent caribou and Lapland longspur were not indicated. The soil consumption rate for caribou was increased from 2% of dry food consumption in the baseline WSLRA to 5% in subsequent assessments, which is the general rate for mammals in Beyer et al. (1994), as used in (Senes, 2008). The soil ingestion rate for Lapland longspur was increased from 2% to 7%, based on Hansen et al. (2011). This study identified a rate of 0.7% for Swainson's thrush, a ground-dwelling songbird that primarily feeds on flying insects and berries. A 10x safety factor was applied because Swainson's thrush is a foliage-gleaner, while Lapland longspur is considered a ground-forager (Cornell University, 2011). This factor is considered to be conservative however, because Lapland longspur does not scratch the ground to uncover food items as other ground foragers do (Harrison 1967, Greenslaw 1977).

**Table 3-1. Body weight (BW), water intake ( $I_{\text{water}}$ ), soil intake ( $I_{\text{soil}}$ ), and wet and dry ( $I_{\text{food}}$ ; FI) food intake for the identified ROCs. Based on Azimuth (2006).**

Parameter	Units	Value	Reference	Notes
<b>Northern Red-backed Vole</b>				
BW	kg wet	0.02	Nagorsen (2005)	Smallest body weight used
$I_{\text{water}}$	L/kg wet/day	0.253	USEPA (1993)	Species profile data for the Prairie Vole
$I_{\text{soil}}$	kg dry/kg wet/day	0.0008	USEPA (1993)	Assumed 2.4% of dry food ingestion rate (similar to Meadow Vole)
$I_{\text{food}}$	kg wet/kg wet/day	0.135	USEPA (1993)	Species profile data for the Prairie Vole
FI	kg dry/kg wet/day	0.049	Not available	Moisture in food assumed to be 64% as per diet moisture calculation
<b>Caribou</b>				
BW	kg wet	75	Dauphine (1976)	Smallest body weight used
$I_{\text{water}}$	L/kg wet/day	0.064	USEPA (1993)	Based on allometric equation for all mammals (L/day) $(0.099 \cdot \text{BW})^{0.90}$
$I_{\text{soil}}$	kg dry/kg wet/day	0.0013	Beyer et al. (1994)	Assumed 5% of dry food ingestion rate (general rate for mammals)
$I_{\text{food}}$	kg wet/kg wet/day	0.047	Not available	Moisture in food assumed to be 43% as per diet moisture calculation
FI	kg dry/kg wet/day	0.027	USEPA (1993)	Based on total dry food intake for herbivorous mammals (g/day) $(0.577 \cdot \text{BW})^{0.727}$
<b>Lapland Longspur</b>				
BW	kg wet	0.023	Cornell University (2011)	Smallest body weight used
$I_{\text{water}}$	L/kg wet/day	0.205	USEPA (1993)	Based on allometric equation for all birds (L/day) $(0.059 \cdot \text{BW})^{0.67}$
$I_{\text{soil}}$	kg dry/kg wet/day	0.0174	Hansen et al. (2011)	Assumed 7% of dry food ingestion rate (rate of Swainson's thrush +10x safety factor)
$I_{\text{food}}$	kg wet/kg wet/day	0.656	USEPA (1993)	Moisture in food of insectivorous birds; assumed 62% as per diet moisture calculation
FI	kg dry/kg wet/day	0.249	USEPA (1993)	Based on total dry food intake for passerine birds (g/day) $(0.398 \cdot \text{BW})^{0.850}$
<b>Canada Goose</b>				
BW	kg wet	2.000	Mowbray et al. (2002)	Smallest body weight used
$I_{\text{water}}$	L/kg wet/day	0.044	USEPA (1993)	Species profile data for Canada Goose
$I_{\text{soil}}$	kg dry/kg wet/day	0.0006	USEPA (1993)	Assumed 8.2% of dry food ingestion rate
$I_{\text{food}}$	kg wet/kg wet/day	0.032	USEPA (1993)	Species profile data for Canada Goose
FI	kg dry/kg wet/day	0.011	Not available	Moisture in food assumed to be 66% as per diet moisture calculation

### 3.2 DIETARY CONCENTRATIONS OF COPCS

Concentrations of COPCs were measured in and around the Meadowbank site in water, soil and plant tissue (sedges, lichens, berries) in 2014. Methods of collection were as in Azimuth (2006) and in 2011 and 2014. A total of 55 samples each of soil and plant tissue (lichen, sedge, berries) were collected. This included five samples of each media type from four onsite locations, three near-site locations, one AWAR location (km 78; 100 m downwind of the road) and three external reference locations (see Figure 3-1). Coordinates for all locations are provided in Table 3-2.

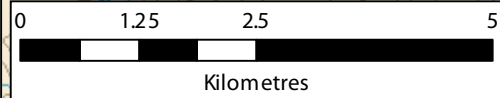
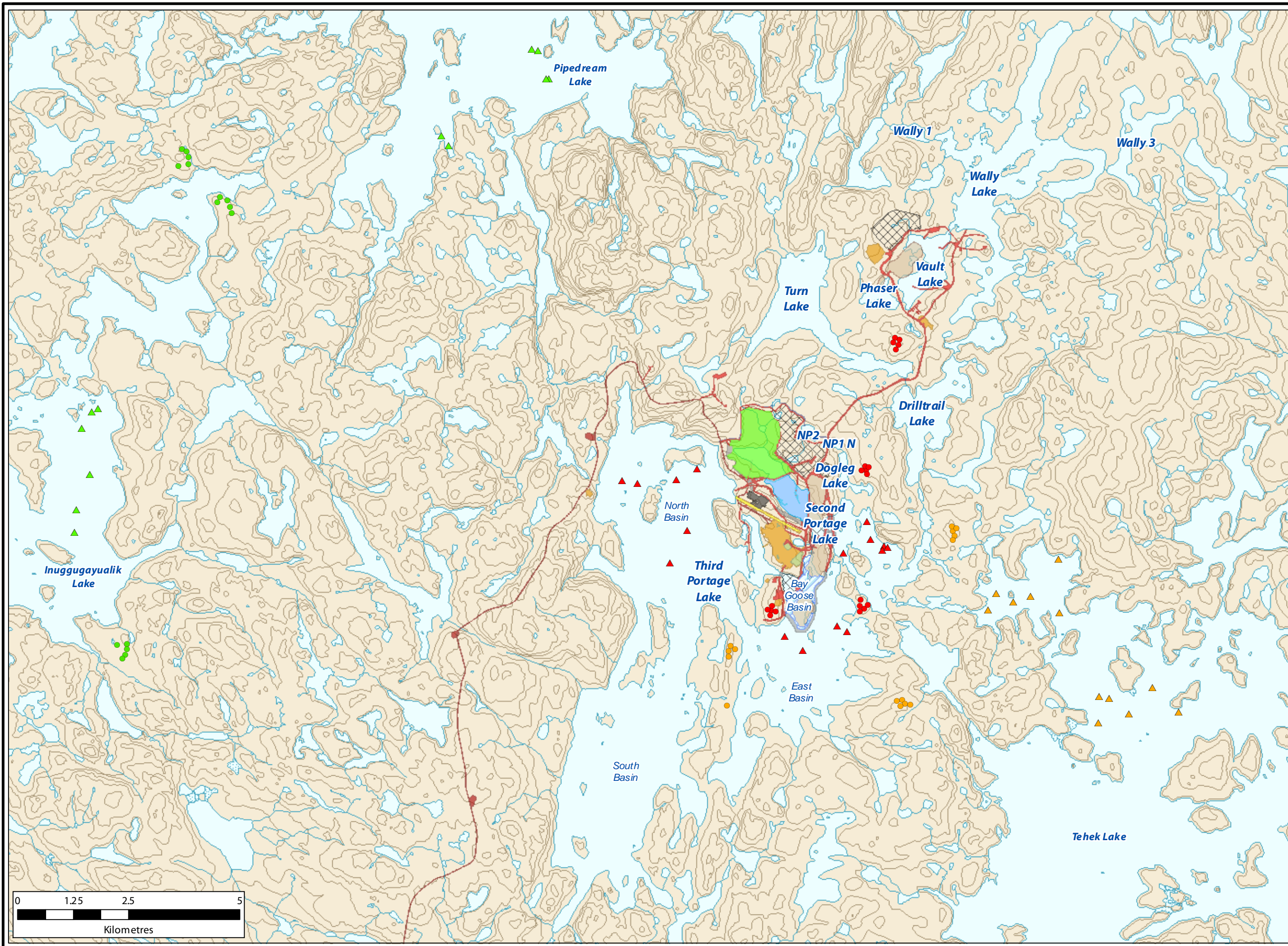
Water samples were from the 2017 Core Receiving Environment Monitoring Program (CREMP) data collection. Onsite concentrations are from samples collected in Second Portage Lake (SPL) and the east and north basins of Third Portage Lake (TPE, TPN). Near-site and AWAR concentrations are from samples collected in Tehek Lake (TE), and external reference samples are from Inuggugayualik Lake (INUG) and Pipedream Lake (PDL). Total number of samples for onsite, near-site, and external reference locations were 34, 2, and 22, respectively.

Concentrations in water, soil and plant tissue used for food chain modeling represent the upper 95% confidence limit of the mean (UCLM). If values were below the detection limit, a value of  $\frac{1}{2}$  the detection limit was used. Based on published literature, methyl mercury was assumed to comprise 1% of total mercury in water and soil, and 34% of total mercury in plant tissue, and inorganic mercury = total – methyl mercury (Azimuth, 2006, Section 3.1.3.2).

Concentrations of COPCs in insects were not measured in any assessment, but were modeled in several cases (arsenic, cadmium, copper, lead, zinc) from soil concentrations using published bioaccumulation models (see Azimuth (2006), Appendix D). This method is particularly conservative, because the modeled factors are for ground insects whereas the songbird population in this assessment consumes primarily flying insects. For the rest of the COPCs, an insect BAF of 1 was assumed.

**Table 3-2. UTM coordinates for soil and vegetation sampling locations.**

<b>Sampling Location</b>	<b>Site #1</b>	<b>Site #2</b>	<b>Site #3</b>	<b>Site #4</b>	<b>Site #5</b>
<i>Treatment Area</i>					
1 – Onsite	14W 0639238 7215692	14W 0639137 7215734	14W 0639061 7215668	14W 0639109 7215569	14W 0639010 7215459
2 – Near-site	15W 0359410 7214020	15W 0359403 7214128	15W 0359507 7214072	15W 0359459 7213912	15W 0359391 7213816
3 – Onsite	14W 0640069 7212342	14W 0640146 7212421	14W 0639967 7212281	14W 0639976 7212409	14W 0639991 7212541
4 – Near-site	14W 0640916 7210294	14W 0640994 7210201	14W 0641112 7210194	14W 0640890 7210137	14W 0640802 7210271
5 – Near-site	14W 0637020 7211270	14W 0636978 7211160	14W 0637013 7211394	14W 0637162 7211419	14W 0637057 7211513
6 – Onsite	14W 0638559 7213995	14W 0638651 7213953	14W 0638780 7214028	14W 0638515 7214226	14W 0638400 7214038
7 – Near-site	14W 0640847 7218280	14W 0640872 7218395	14W 0640755 7218444	14W 0640719 7218338	14W 0640788 7218177
8 - AWAR	14W 0626884 7200614	14W 0626837 7200520	14W 0626806 7200427	14W 0626746 7200306	14W 0626675 7200224
<i>External Reference Area</i>					
1 – Control	14W 0623453 7211586	14W 0623450 7211467	14W 0623416 7211345	14W 0623339 7211252	14W 0623217 7211558
2 – Control	14W 06255518 7221488	14W 0625569 7221607	14W 0625743 7221542	14W 0625790 7221388	14W 0625825 7221244
3 – Control	14W 0624717 7222685	14W 0624818 7222623	14W 0624850 7222504	14W 0624861 7222349	14W 0624636 7222313



**Legend**

**Soil/Veg Sampling Location**

- Onsite
- Near Site
- External Reference

**Water Sampling Locations**

- ▲ Onsite
- ▲ Near Site
- ▲ External Reference

**2014 Mine Plan**

- Quarry
- AWP/AR Quarry
- ▨ Dewatered Lake
- Portage Attenuation Facility
- Tailings Storage Facility
- Roads
- AWP/AR
- Dikes
- Diversion Ditch
- Stockpiles
- Pits
- Facility
- Airstrip
- ▨ Waste Dump

**Wildlife Screening Level Risk Assessment**

**DOUGAN & ASSOCIATES**  
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PROJECT: DA11-062-03

CLIENT: Agnico-Eagle Mines Ltd., Meadowbank Div.

	DATE: MARCH 2015
	SCALE: 1:80,000
	DRAWN BY: LW
	CHECKED BY: MAY

FIGURE: 1

The information displayed on this map has been compiled from various sources. While every effort has been made to accurately depict the information, this map should not be relied on as being a precise indicator of locations, features, or roads, nor as a guide to navigation. MNR data provided by Queen's Printer of Ontario. Use of the data in any derivative product does not constitute an endorsement by the MNR or the Ontario Government of such products.



### 3.2.1 Dietary Preferences

The proportions of food items (sedge, lichen, berries, insects) that comprise each diet were determined by the literature reviews referred to in Section 2.6. Similar values have been used in another recent risk assessment (Senes, 2008) and all dietary preferences presented in Azimuth (2006) were used in subsequent assessments (Table 3-3). Consistent with previous assessments, sedges, lichens and berries were considered surrogates for all plant matter ingested by the ROCs.

**Table 3-3. Estimated dietary preferences for the receptors of concern at the Meadowbank site. From Azimuth, 2006.**

Dietary Item	Northern red-backed vole	Caribou	Lapland longspur	Canada goose
Sedges	55%	30%	25%	50%
Lichens	0%	65%	0%	0%
Berries	40%	5%	5%	45%
Insects	5%	0%	70%	5%
Total	100%	100%	100%	100%

### 3.3 BIOTRANSFER FACTOR

The uptake efficiency factor (biotransfer or absorption factor) describes the proportion of the COPC that is absorbed into the animal from any ingested sources. Uptake efficiency was conservatively assumed to be 100% for all COPC/receptor combinations. This is an extremely conservative assumption; for example, chromium compounds were found to have a maximum absorption efficiency of 10% in the GI tract of birds (Outridge and Scheuhammer, 1993).

### 3.4 TIME IN AREA

Territory size (foraging range) affects the proportion of an animal's diet that could be affected by mine-related contaminants. In the baseline assessment, an adjustment factor for foraging range was not applied (animals were assumed to spend 100% of time in the study area). For this assessment, the only ROC assumed to spend 100% of its time in any study area was the northern red-backed vole, because of its small territory size. Caribou, Canada geese and Lapland longspur are migratory species, and the fraction of time spent in each study area (onsite, near-site, AWAR) was estimated at 33%, based on a recent risk assessment completed in the Kivalliq region (Senes, 2008). The remaining fraction of exposure dose (67%) was calculated based on external reference samples. An examination of collared caribou from the Meadowbank region found that any one animal spent no more than a maximum of 12% of the year within 25 km of the minesite (Martin Gebauer and Jason Shaw, personal communication, March 2012), so the assumption of 33% is expected to be conservative. Risk was characterized for small-territory ROCs (Northern red-backed vole, Canada geese and Lapland longspur) for onsite, near-site, AWAR and external reference locations separately, in order to determine whether those animals choosing territories on the mine-site were at

increased risk compared to those choosing territories at nearby locations. Exposure data for onsite and near-site locations was combined for caribou because it was found that caribou could readily roam between the onsite and near-site locations in the course of a day.

## 4 TOXICITY ASSESSMENT

---

The toxicity reference values (TRVs) used in the 2006 assessment were collated from a review of the literature; mainly from Sample et al. (1996). This source was again used in subsequent assessments, including for the additional COPCs (tin and uranium), because it represents one of the most comprehensive and commonly used sources available for wildlife toxicity reference values. In order to ensure the selected TRVs were relevant to the Meadowbank site and the conditions of this risk assessment, several criteria were used in the baseline assessment in screening toxicity studies. 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. All TRVs from the baseline assessment were maintained in this report. The following describes TRV selection, as performed by Azimuth (2006):

The TRVs chosen for use in the risk characterization include both no observable adverse effect levels (NOAELs) and lowest observable adverse effect levels (LOAELs) when available. If effects concentrations were reported in terms of food concentrations, these were converted to dose. If a LOAEL was reported but no NOAEL could be determined, it was estimated as 1% of the LOAEL (as in Sample et al. 1996, Chapman et al. 1998). LOAELs cannot be estimated if only a NOAEL is available. Since the protection goal of this risk assessment no adverse effect of COPCs on populations of the ROCs, LOAELs are the most relevant TRV, and are used in the final risk estimate. See Appendix C for TRVs used in this assessment.

Instead of species-to-species uncertainty factors, the baseline assessment used allometric scaling factors (Sample et al. 1996) to adjust mammalian TRVs from the test species (typically mouse or rat) to the ROC. A scaling factor of 1 was used for birds (Mineau et al. 1996).

Where toxicity information was found for multiple forms of a contaminant, the one with the greatest toxic potency was chosen. TRVs for chromium-VI were available for mammals, but only chromium-III was available for birds. No NOAELs or LOAELs were available for total mercury. Mammalian LOAELs were not available for inorganic mercury or beryllium. Avian LOAELs were not available for uranium or vanadium. Avian NOAELs were not available for antimony and beryllium and were extrapolated from the mammalian values. The avian LOAEL for antimony was extrapolated from the mammalian value.

## 5 RISK CHARACTERIZATION

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### 5.1 HAZARD QUOTIENTS

The risk characterization compares predicted exposure concentrations with the toxicity reference values from the literature, using the hazard quotient approach. Hazard quotients for all locations (onsite, near-site, AWAR and external reference) were calculated as:

$$HQ = EDI / TRV$$

Where:

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

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

See Appendix A for an example calculation and Appendix C for all TRVs used in this assessment. As discussed above, the TRV used in this assessment corresponds to the LOAEL, unless only a NOAEL was available (indicated). 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 an SLRA indicates the possible need for more in-depth assessment, including analysis of assumptions used. However, when HQ values exceed 1 for both the baseline (or external reference) and the study areas, and are of similar magnitude, it may be assumed that the receptor is adapted to the measured exposure level, or that the assumptions used in calculating the HQ have resulted in an over-estimation of risk (Dominion Diamond, 2015). HQ values are shown in Tables 5-1 – 5-4, and the risk characterization is summarized below.

#### 5.1.1 Northern red-backed vole

For the Northern red-backed vole, HQs were below 1 for all COPCs in all locations (onsite, near-site, AWAR and external reference). Risk for this ROC under current conditions is therefore classified as negligible.

#### 5.1.2 Caribou

For caribou, HQs were below 1 for all COPCs in all locations (onsite, AWAR and external reference). Risk for this ROC under current conditions is therefore classified as negligible.

#### 5.1.3 Lapland longspur

HQs were below 1 for all COPCs in all locations (onsite, near-site, AWAR, external reference) with the exception of chromium. For chromium, the external reference site HQ was greater than onsite, near-site and AWAR values. HQ values exceeding 1 were also found for chromium in the baseline (2005), 2011, and 2014 assessments, indicating that potentially elevated risk for Lapland longspur exists independent of mine-related activities. While further examination is beyond the scope of this screening level assessment, ultramafic rock, which is commonly found in the region, is generally known to contain elevated concentrations of chromium (e.g., on the order of 2000 mg/kg) relative to other rock types (Motzer and Engineers, 2004). In addition, conservative assumptions were used here that likely contribute to over-estimates of HQs. These include:

- Absorption efficiency of 100%
  - o This assessment assumes 100% absorption of the total ingested mass of COPC. However, absorption from the GI tract in wildlife has been reported at <10% for chromium (Outridge and Scheuhammer, 1993).

- BAF of 1
  - o Azimuth (2006) found that exposure doses were inflated by the use of a BAF of 1 for predicting concentrations in insects (the main food source for Lapland longspur). This means that concentrations in insects were assumed to equal concentrations in soil. Although concentrations of metals in insects were not measured directly, three samples were analyzed in 2006. The highest concentration of chromium was found to be 0.33 mg/kg, which is approximately 60 times lower than values predicted in this assessment.

#### 5.1.4 Canada goose

For the Canada goose, HQs were below 1 for all COPCs in all locations. Risk for this ROC under current conditions is therefore classified as negligible.

**Table 5-1. Hazard quotients for identified COPCs for onsite study areas at the Meadowbank site. All values are LOAEL-based HQs, except where underline indicates NOAEL-based HQ. HQ for caribou represents calculation for onsite+near-site locations. Hazard quotients > 1 are shaded gray.**

<b>Onsite Locations</b>				
COPC	Northern Red-backed Vole	Caribou	Lapland Longspur	Canada Goose
Antimony	0.0	0.0	0.0	0.0
Arsenic	0.0	0.3	0.1	0.0
Barium	0.0	0.1	0.2	0.0
Beryllium	0.0	0.0	1.0	0.0
Cadmium	0.0	0.0	0.0	0.0
Chromium	0.0	0.1	3.0	0.0
Cobalt	0.0	0.0	0.4	0.0
Copper	0.0	0.0	0.0	0.0
Lead	0.0	0.0	0.0	0.0
Manganese	0.0	0.1	0.1	0.0
Inorganic Mercury	0.0	0.0	0.0	0.0
Methyl Mercury	0.0	0.1	0.0	0.0
Molybdenum	0.0	0.0	0.0	0.0
Nickel	0.0	0.0	0.1	0.0
Selenium	0.0	0.0	0.0	0.0
Strontium	0.0	0.0	0.2	0.0
Thallium	0.0	0.0	0.0	0.0
Tin	0.0	0.0	0.0	0.0
Uranium	0.0	0.0	0.0	0.0
Vanadium	0.0	0.2	0.4	0.0
Zinc	0.0	0.0	0.2	0.0

**Table 5-2. Hazard quotients for identified COPCs at the near-site study area at the Meadowbank site. All value are LOAEL-based HQs, except where underline indicates NOAEL-based HQ. Hazard quotients > 1 are shaded gray. For caribou, onsite and near-site sample results were combined (see Table 5-1).**

<b>Near-site Locations</b>			
<b>COPC</b>	<b>Northern Red-backed Vole</b>	<b>Lapland Longspur</b>	<b>Canada Goose</b>
Antimony	0.0	0.0	0.0
Arsenic	0.0	0.0	0.0
Barium	0.0	0.2	0.0
Beryllium	0.0	1.0	0.0
Cadmium	0.0	0.0	0.0
Chromium	0.0	2.9	0.0
Cobalt	0.0	0.3	0.0
Copper	0.0	0.0	0.0
Lead	0.0	0.0	0.0
Manganese	0.0	0.1	0.0
Inorganic Mercury	0.0	0.0	0.0
Methyl Mercury	0.0	0.0	0.0
Molybdenum	0.0	0.0	0.0
Nickel	0.0	0.1	0.0
Selenium	0.0	0.0	0.0
Strontium	0.0	0.2	0.0
Thallium	0.0	0.0	0.0
Tin	0.0	0.0	0.0
Uranium	0.0	0.0	0.0
Vanadium	0.0	0.3	0.0
Zinc	0.0	0.2	0.0

**Table 5-3. Hazard quotients for identified COPCs at the AWAR study area at the Meadowbank site. All value are LOAEL-based HQs, except where underline indicates NOAEL-based HQ. Hazard quotients > 1 are shaded gray.**

<b>AWAR Locations</b>				
COPC	Northern Red-backed Vole	Caribou	Lapland Longspur	Canada Goose
Antimony	0.0	0.0	0.0	0.0
Arsenic	0.0	0.2	0.0	0.0
Barium	0.1	0.2	0.2	0.0
Beryllium	0.0	0.0	0.9	0.0
Cadmium	0.0	0.0	0.0	0.0
Chromium	0.0	0.2	2.8	0.0
Cobalt	0.0	0.1	0.3	0.0
Copper	0.0	0.0	0.0	0.0
Lead	0.0	0.0	0.0	0.0
Manganese	0.1	0.1	0.1	0.0
Inorganic Mercury	0.0	0.0	0.0	0.0
Methyl Mercury	0.0	0.1	0.0	0.0
Molybdenum	0.0	0.0	0.0	0.0
Nickel	0.0	0.0	0.1	0.0
Selenium	0.0	0.0	0.0	0.0
Strontium	0.0	0.0	0.2	0.0
Thallium	0.0	0.0	0.0	0.0
Tin	0.0	0.0	0.0	0.0
Uranium	0.0	0.0	0.0	0.0
Vanadium	0.1	0.3	0.4	0.0
Zinc	0.0	0.0	0.2	0.0

**Table 5-4. Hazard quotients for identified COPCs at the external reference study area at the Meadowbank site. All value are LOAEL-based HQs, except where underline indicates NOAEL-based HQ. Hazard quotients > 1 are shaded gray.**

<b>External Reference Location</b>				
<b>COPC</b>	<b>Northern Red-backed Vole</b>	<b>Caribou</b>	<b>Lapland Longspur</b>	<b>Canada Goose</b>
Antimony	0.0	0.0	0.0	0.0
Arsenic	0.0	0.1	0.0	0.0
Barium	0.0	0.1	0.2	0.0
Beryllium	0.0	0.0	0.9	0.0
Cadmium	0.0	0.0	0.0	0.0
Chromium	0.0	0.1	3.5	0.0
Cobalt	0.0	0.0	0.4	0.0
Copper	0.0	0.0	0.0	0.0
Lead	0.0	0.0	0.0	0.0
Manganese	0.0	0.1	0.1	0.0
Inorganic Mercury	0.0	0.0	0.0	0.0
Methyl Mercury	0.0	0.1	0.0	0.0
Molybdenum	0.0	0.0	0.0	0.0
Nickel	0.0	0.0	0.1	0.0
Selenium	0.0	0.0	0.0	0.0
Strontium	0.0	0.0	0.2	0.0
Thallium	0.0	0.0	0.0	0.0
Tin	0.0	0.0	0.0	0.0
Uranium	0.0	0.0	0.0	0.0
Vanadium	0.0	0.1	0.4	0.0
Zinc	0.0	0.0	0.2	0.0

## **5.2 UNCERTAINTY ASSESSMENT**

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

### **5.2.1 Exposure Assessment**

ROCs used in the assessment are assumed to represent categories of species (ungulates, small mammals, waterfowl and song birds) that are found around the Meadowbank site. 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.

Exposure concentrations in environmental media were assumed to be represented by the 95% UCLM of the measured concentrations. Since animals would be more likely to ingest food sources with a range of COPC concentrations, this is a conservative assumption.

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.

It was assumed that flying insects accumulate the same proportion of metals from soil as ground-dwelling insects, because no flying insect BAFs were available. This assumption likely results in an over-estimation of risk for ROCs who primarily consume flying insects (Lapland longspur).

Absorption of COPCs in the gastrointestinal tract was assumed to be 100%. This assumption likely results in an over-estimation of risk for all COPCs/ROC combinations.

Methyl mercury proportions of total mercury concentrations were estimated from the available literature using the UCLM from two studies (Azimuth, 2006). While there is an unknown degree of uncertainty in the extrapolation of this data for use at the Meadowbank site, the fractions chosen were at the highest end of the published range, and are therefore designed to be conservative. Furthermore, mercury was included as a COPC because it was found to be of concern to the general public in the Arctic, and no source of elevated mercury was identified at the mine.

Ingestion of COPCs 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).

#### 5.2.2 Toxicity Assessment

TRVs were not available for the ROCs and species-to-species extrapolations were necessary. This included allometric scaling for mammals, 1:1 scaling for birds, and the application of uncertainty factors in mammal-to-avian extrapolation. 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.

As is common in screening level risk assessments and as per previous assessments, the estimation of risk is for each COPC 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.



## 6 ASSESSMENT OF IMPACT PREDICTIONS

In the baseline SLRA (Azimuth, 2006), estimates were made of the relative increase in metals concentrations in soil that would occur onsite due to dust generation during 10 years of mine operations. The majority of soil concentrations were not expected to increase beyond 1%, with a maximum increase of 10% (thallium). Onsite concentrations measured in 2017 were compared to baseline values to determine whether any changes exceeded impact predictions (Table 6-1). In all cases except beryllium, the 90<sup>th</sup> centile of measured concentrations in 2017 was the same as or lower than baseline concentrations. A minor increase in the 90<sup>th</sup> centile of measured concentrations for beryllium in soil occurred, from 0.52 to 0.57 mg/kg. While concentrations of beryllium will continue to be observed to determine trends, no increased risk to wildlife from consumption of beryllium was calculated (in fact, hazard quotients were lower than historical values for this compound). Therefore overall, impacts predicted in the baseline SLRA are not being exceeded.

**Table 6-1. Baseline, 2014, and 2017 onsite measured concentrations of COPCs in soil.**

Chemical	Concentration in soil (90 <sup>th</sup> centile; mg/kg)			Predicted Change from Baseline	Measured Change from Baseline 2014	Measured Change from Baseline 2017
	Baseline	Onsite 2014	Onsite 2017			
Antimony (Sb)	10.00	0.15	0.16	0%	-98%	-98%
Arsenic (As)	24.70	24.69	20.45	1%	0%	-17%
Barium (Ba)	56.90	42.51	46.65	2%	-25%	-18%
Beryllium (Be)	0.52	0.55	0.57	0%	5%	9%
Cadmium (Cd)	0.50	0.13	0.12	1%	-74%	-77%
Chromium (Cr)	129.50	49.91	74.72	4%	-61%	-42%
Cobalt (Co)	13.60	10.21	11.60	1%	-25%	-15%
Copper (Cu)	20.30	14.92	16.94	2%	-26%	-17%
Lead (Pb)	30.00	14.46	12.91	0%	-52%	-57%
Manganese (Mn)	438.20	325.28	383.38	0%	-26%	-13%
Mercury (Hg)	0.10	0.01	0.02	-1%	-89%	-77%
Molybdenum (Mo)	4.00	0.99	0.99	1%	-75%	-75%
Nickel (Ni)	63.20	28.14	40.27	5%	-55%	-36%
Selenium (Se)	0.50	0.10	0.10	0%	-80%	-80%
Strontium (Sr)	25.80	14.75	14.11	2%	-43%	-45%
Thallium (Tl)	1.00	0.15	0.16	10%	-85%	-84%
Vanadium (V)	26.30	22.11	24.30	2%	-16%	-8%
Zinc (Zn)	55.00	44.78	45.86	0%	-19%	-17%

## 7 CONCLUSIONS

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This SLRA evaluated the risks to wildlife from contaminant exposure in and around the Meadowbank site during operation. The hazard quotient approach was used, which is appropriate for screening level assessments. 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.

Important findings are as follows:

- Risk from all COPCs was found to be negligible for ungulates, small mammals and waterfowl ( $HQ \leq 1$ ) for onsite, near-site, AWAR, and external reference locations. This is consistent with predictions made in the baseline assessment.
- Potentially unacceptable risks to songbirds from chromium ( $HQ > 1$ ) were identified for all locations including the external reference site, which is consistent with baseline, 2011, and 2014 assessments. Furthermore, the external reference HQ exceeded onsite, near-site and AWAR HQ values, indicating risk from this COPC is not elevated as a result of mining activities. Chromium is naturally elevated in ultramafic rock, which is common in the region.
- Soil concentrations of all COPCs measured onsite are lower than baseline values (based on comparisons of 90<sup>th</sup> centile values) with the exception of beryllium, which increased from 0.52 to 0.57 mg/kg. While any further trends will be monitored, no increased risk to wildlife due to consumption of beryllium was observed as compared to the baseline assessment, and HQ values were lower than historical numbers. As a result, predicted impacts are not being exceeded.

Overall the operation of the Meadowbank mine does not appear to be contributing excess risk from chemical contaminants to wildlife residing in the area.

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## **Appendix A**

### **Example Calculation**

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## Exposure of Lapland longspur to Pb (onsite location)

### Exposure Assessment

$$EDI = T_{\text{onsite}}(DS_{\text{onsite}} + DW_{\text{onsite}} + DF_{\text{onsite}}) + T_{\text{ref}}(DS_{\text{ref}} + DW_{\text{ref}} + DF_{\text{ref}})$$

Where:

EDI = estimated daily intake of COPC

$T_{\text{onsite}}$  = fraction of time in study area (i.e. onsite) = 33%

$T_{\text{ref}}$  = remaining fraction of time = 67% (remainder of exposure based on external reference concentrations)

DS = dose from incidental soil ingestion

$I_{\text{soil}}$  = intake of soil

DW = dose from drinking water

$I_{\text{water}}$  = intake of water

DF = dose from food

$I_{\text{food}}$  = intake of food

$Pb_{(\text{media})}$  = measured concentration of lead in media (95% UCLM of onsite or external reference values, accordingly)

Example:

$$DS_{\text{onsite}} (\text{mg/kg ww/d}) = Pb_{\text{soil}} (\text{mg/kg dw}) * I_{\text{soil}} (\text{mg dw/kg ww/d})$$

$$= 11.23 * 0.0174$$

$$= 0.195$$

$$DW_{\text{onsite}} (\text{mg/kg ww/d}) = Pb_{\text{water}} (\text{mg/L}) * I_{\text{water}} (\text{L/kg ww/d})$$

$$= 0.00 * 0.205$$

$$= 0.00$$

$$DF_{\text{onsite}} (\text{mg/kg ww/d}) = Pb_{\text{sedge}} (\text{mg/kg ww}) * 25\% + Pb_{\text{lichen}} (\text{mg/kg ww}) * 0\% + Pb_{\text{berries}} (\text{mg/kg ww}) * 5\% + Pb_{\text{insects}} (\text{mg/kg ww}) * 70\% * I_{\text{food}} (\text{kg ww/kg ww/d})$$

$$= 0.35 * 25\% + 1.68 * 0\% + 0.03 * 5\% + 0.37 * 70\% * 0.656$$

$$= 0.228$$

$$DS_{\text{ref}} (\text{mg/kg ww/d}) = Pb_{\text{soil}} (\text{mg/kg dw}) * I_{\text{soil}} (\text{mg dw/kg ww/d})$$

$$= 8.757 * 0.0174$$

$$= 0.152$$

$$DW_{\text{ref}} (\text{mg/kg ww/d}) = Pb_{\text{water}} (\text{mg/L}) * I_{\text{water}} (\text{L/kg ww/d})$$

$$= 0.00 * 0.205$$

$$= 0.00$$

$$\begin{aligned} DF_{\text{ref}} \text{ (mg/kg ww/d)} &= Pb_{\text{sedge}} \text{ (mg/kg ww)} * 25\% + Pb_{\text{lichen}} \text{ (mg/kg ww)} * 0\% + Pb_{\text{berries}} \text{ (mg/kg ww)} * 5\% + \\ &Pb_{\text{insects}} \text{ (mg/kg ww)} * 70\% * I_{\text{food}} \text{ (kg ww/kg ww/d)} \\ &= 1.01 * 25\% + 2.85 * 0\% + 0.02 * 5\% + 0.31 * 70\% * 0.656 \\ &= 0.309 \end{aligned}$$

$$\begin{aligned} EDI_{\text{Pb}} \text{ (mg/kg ww/d)} &= 33\% (0.195 + 0.00 + 0.228) + 67\% (0.152 + 0.00 + 0.309) \\ &= 0.45 \end{aligned}$$

### **Risk Characterization**

$$\begin{aligned} HQ &= EDI \text{ (mg/kg ww/d)} / \text{LOAEL-based TRV (mg/kg ww/d)**} \\ &= 0.45 / 11.30 \\ &= 0.04 \end{aligned}$$

\*\*see values in Appendix C

## **Appendix B**

### **Measured and Estimated COPC Concentrations in Soil, Plants, Water and Insects**

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**COPC Concentrations in Soil, Water, Plant Tissue and Insects:  
Onsite Locations - 2017  
(table based on Azimuth, 2006)**

Units	Moisture Content <sup>1</sup> (%)	COPC Concentrations											
		Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Manganese	Total Mercury	
<b>Soil (measured)</b>													
95% UCLM	mg/kg dw	-	0.114	14.026	39.819	0.495	0.086	56.732	9.681	13.338	10.620	340.580	0.015
<b>Lake Water (measured)</b>													
95% UCLM	mg/L	-	0.000	0.000	0.003	0.000	0.000	0.000	0.000	0.001	0.000	0.002	0.000
<b>Sedges (measured)</b>													
95% UCLM	mg/kg ww	42.70%	0.004	0.387	16.245	0.011	0.032	5.142	0.365	1.954	0.434	195.880	0.008
<b>Lichen (measured)</b>													
95% UCLM	mg/kg ww	15.89%	0.023	3.137	19.036	0.068	0.110	44.852	2.139	4.476	2.783	159.789	0.130
<b>Berries (measured)</b>													
95% UCLM	mg/kg ww	86.80%	0.001	0.014	0.875	0.001	0.004	0.142	0.013	0.696	0.007	9.211	0.001
<b>Insects (predicted)<sup>3</sup></b>													
95% UCLM	mg/kg dw		0.114	1.006	39.819	0.495	0.324	56.732	9.681	15.227	1.024	340.580	0.015
	mg/kg ww	65.00%	0.040	0.352	13.937	0.173	0.113	19.856	3.388	5.330	0.358	119.203	0.005

**Notes:**

na not available

nd no data

<sup>1</sup> Moisture content for plants represents average of available site-specific data; moisture content for insects based on Azimuth (2005); wet wt concentration = dry wt concentration\*(1-Moisture)

<sup>2</sup> Assumed fractions of MeHg in exposure media (see text for details)

Soil 0.01

Plants 0.34

Invertebrates 0.17

Water 0

<sup>3</sup> Predicted using soil 95th centile and Insect BAF; see text)

**COPC Concentrations in Soil, Water, Plant Tissue and Insects:  
Onsite Locations - 2017  
(table based on Azimuth, 2006)**

	Units	COPC Concentrations										
		Inorg-Hg <sup>2</sup>	MeHg <sup>2</sup>	Molybdenum	Nickel	Selenium	Strontium	Thallium	Tin	Uranium	Vanadium	Zinc
<b>Soil (measured)</b>												
95% UCLM	mg/kg dw	0.015	0.000	0.881	30.747	0.100	12.907	0.142	1.000	2.854	21.583	40.716
<b>Lake Water (measured)</b>												
95% UCLM	mg/L	0.000	0.000	0.000	0.000	0.000	0.015	0.000	0.000	0.000	0.000	0.002
<b>Sedges (measured)</b>												
95% UCLM	mg/kg ww	0.005	0.003	0.730	3.109	0.015	6.685	0.003	0.014	0.049	0.688	14.550
<b>Lichen (measured)</b>												
95% UCLM	mg/kg ww	0.086	0.044	0.646	16.150	0.088	13.223	0.023	0.043	0.326	5.218	19.041
<b>Berries (measured)</b>												
95% UCLM	mg/kg ww	0.000	0.000	0.201	0.005	0.334	0.000	0.046	0.001	0.016	1.121	1.586
<b>Insects (predicted)<sup>3</sup></b>												
95% UCLM	mg/kg dw	0.015	0.000	0.881	30.747	0.100	12.907	0.142	1.000	2.854	21.583	180.450
	mg/kg ww	0.005	0.000	0.308	10.762	0.035	4.517	0.050	0.350	0.999	7.554	63.158

**Notes:**

na not available

nd no data

<sup>1</sup> Moisture content for plants represents average of available site-specific data; moisture content for insects based on Azimuth (2005); wet wt concentration = dry wt concentration\*(1-Moisture)

<sup>2</sup> Assumed fractions of MeHg in exposure media (see text for details)

Soil 0.01

Plants 0.34

Invertebrates 0.17

Water 0

<sup>3</sup> Predicted using soil 95% UCLM and Insect BAF; see text)

**COPC Concentrations in Soil, Water, Plant Tissue and Insects:  
Near-site Locations - 2017  
(table based on Azimuth, 2006)**

	Units	Moisture Content <sup>1</sup> (%)	COPC Concentrations										
			Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Manganese	Total Mercury
<b>Soil (measured)</b>													
95% UCLM	mg/kg dw	-	0.050	7.088	36.824	0.434	0.069	49.851	6.392	8.759	8.153	271.731	0.022
<b>Lake Water (measured)</b>													
95% UCLM	mg/L	-	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000
<b>Sedges (measured)</b>													
95% UCLM	mg/kg ww	42.70%	0.002	0.153	16.066	0.014	0.017	2.617	0.194	1.156	0.214	154.383	0.007
<b>Lichen (measured)</b>													
95% UCLM	mg/kg ww	15.89%	0.034	2.616	22.191	0.110	0.083	28.842	1.214	2.881	2.859	114.382	0.116
<b>Berries (measured)</b>													
95% UCLM	mg/kg ww	86.80%	0.001	0.008	1.309	0.001	0.010	0.080	0.008	0.666	0.005	15.303	0.001
<b>Insects (predicted)<sup>3</sup></b>													
95% UCLM	mg/kg dw		0.050	0.533	36.824	0.434	0.283	49.851	6.392	13.366	0.851	271.731	0.022
	mg/kg ww	65.00%	0.018	0.187	12.889	0.152	0.099	17.448	2.237	4.678	0.298	95.106	0.008

**Notes:**

na not available

nd no data

<sup>1</sup> Moisture content for plants represents average of available site-specific data; moisture content for insects based on Azimuth (2005); wet wt concentration = dry wt concentration\*(1-Moisture)

<sup>2</sup> Assumed fractions of MeHg in exposure media (see text for details)

Soil 0.01

Plants 0.34

Invertebrates 0.17

Water 0

<sup>3</sup> Predicted using soil 95% UCLM and Insect BAF; see text)

**COPC Concentrations in Soil, Water, Plant Tissue and Insects:  
Near-site Locations - 2017  
(table based on Azimuth, 2006)**

		COPC Concentrations										
	Units	Inorg-Hg <sup>2</sup>	MeHg <sup>2</sup>	Molybdenum	Nickel	Selenium	Strontium	Thallium	Tin	Uranium	Vanadium	Zinc
<b>Soil (measured)</b>												
95% UCLM	mg/kg dw	0.022	0.000	0.923	21.750	0.100	12.459	0.141	1.000	3.443	18.728	34.263
<b>Lake Water (measured)</b>												
95% UCLM	mg/L	0.000	0.000	0.000	0.000	0.000	0.009	0.000	0.000	0.000	0.001	0.002
<b>Sedges (measured)</b>												
95% UCLM	mg/kg ww	0.005	0.002	0.561	1.896	0.012	5.227	0.004	0.010	0.050	0.300	12.010
<b>Lichen (measured)</b>												
95% UCLM	mg/kg ww	0.077	0.039	0.375	9.935	0.095	8.161	0.023	0.050	0.390	2.982	17.452
<b>Berries (measured)</b>												
95% UCLM	mg/kg ww	0.000	0.000	0.195	0.005	0.398	0.000	0.050	0.001	0.013	1.313	1.331
<b>Insects (predicted)<sup>3</sup></b>												
95% UCLM	mg/kg dw	0.022	0.000	0.923	21.750	0.100	12.459	0.141	1.000	3.443	18.728	173.729
	mg/kg ww	0.008	0.000	0.323	7.613	0.035	4.361	0.049	0.350	1.205	6.555	60.805

**Notes:**

na not available

nd no data

<sup>1</sup> Moisture content for plants represents average of available site-specific data; moisture content for insects based on Azimuth (2005);  
wet wt concentration = dry wt concentration\*(1-Moisture)

<sup>2</sup> Assumed fractions of MeHg in exposure media (see text for details)

Soil 0.01

Plants 0.34

Invertebrates 0.17

Water 0

<sup>3</sup> Predicted using soil 95% UCLM and Insect BAF; see text)

**COPC Concentrations in Soil, Water, Plant Tissue and Insects:  
Onsite + Near-site Locations - 2017  
(table based on Azimuth, 2006)**

	Units	Moisture Content <sup>1</sup> (%)	COPC Concentrations										
			Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Manganese	Total Mercury
<b>Soil (measured)</b>													
95% UCLM	mg/kg dw	-	0.087	10.198	37.024	0.457	0.073	49.845	8.045	10.834	9.235	305.862	0.016
<b>Lake Water (measured)</b>													
95% UCLM	mg/L	-	0.000	0.000	0.003	0.000	0.000	0.000	0.000	0.001	0.000	0.002	0.000
<b>Sedges (measured)</b>													
95% UCLM	mg/kg ww	42.70%	0.003	0.284	15.457	0.011	0.025	4.034	0.286	1.571	0.329	173.096	0.007
<b>Lichen (measured)</b>													
95% UCLM	mg/kg ww	15.89%	0.026	2.692	19.220	0.078	0.094	35.569	1.659	3.606	2.649	135.335	0.118
<b>Berries (measured)</b>													
95% UCLM	mg/kg ww	86.80%	0.001	0.011	1.038	0.001	0.006	0.115	0.011	0.671	0.006	11.318	0.001
<b>Insects (predicted)<sup>3</sup></b>													
95% UCLM	mg/kg dw		0.087	0.748	37.024	0.457	0.294	49.845	8.045	14.277	0.929	305.862	0.016
	mg/kg ww	65.00%	0.030	0.262	12.958	0.160	0.103	17.446	2.816	4.997	0.325	107.052	0.006

**Notes:**

na not available

nd no data

<sup>1</sup> Moisture content for plants represents average of available site-specific data; moisture content for insects based on Azimuth (2005);  
wet wt concentration = dry wt concentration\*(1-Moisture)

<sup>2</sup> Assumed fractions of MeHg in exposure media (see text for details)

Soil 0.01

Plants 0.34

Invertebrates 0.17

Water 0

<sup>3</sup> Predicted using soil 95% UCLM and Insect BAF; see text)

**COPC Concentrations in Soil, Water, Plant Tissue and Insects:  
Onsite + Near-site Locations - 2017  
(table based on Azimuth, 2006)**

	Units	COPC Concentrations										
		Inorg-Hg <sup>2</sup>	MeHg <sup>2</sup>	Molybdenum	Nickel	Selenium	Strontium	Thallium	Tin	Uranium	Vanadium	Zinc
<b>Soil (measured)</b>												
95% UCLM	mg/kg dw	0.016	0.000	0.869	25.258	0.100	12.430	0.138	1.000	2.994	19.788	37.007
<b>Lake Water (measured)</b>												
95% UCLM	mg/L	0.000	0.000	0.000	0.000	0.000	0.015	0.000	0.000	0.000	0.000	0.002
<b>Sedges (measured)</b>												
95% UCLM	mg/kg ww	0.005	0.002	0.631	2.567	0.013	5.896	0.003	0.012	0.044	0.516	13.055
<b>Lichen (measured)</b>												
95% UCLM	mg/kg ww	0.078	0.040	0.513	12.687	0.087	10.960	0.021	0.042	0.316	4.035	17.712
<b>Berries (measured)</b>												
95% UCLM	mg/kg ww	0.000	0.000	0.193	0.005	0.354	0.000	0.046	0.001	0.014	1.157	1.435
<b>Insects (predicted)<sup>3</sup></b>												
95% UCLM	mg/kg dw	0.016	0.000	0.869	25.258	0.100	12.430	0.138	1.000	2.994	19.788	176.698
	mg/kg ww	0.006	0.000	0.304	8.840	0.035	4.350	0.048	0.350	1.048	6.926	61.844

**Notes:**

na not available

nd no data

<sup>1</sup> Moisture content for plants represents average of available site-specific data; moisture content for insects based on Azimuth (2005);  
wet wt concentration = dry wt concentration\*(1-Moisture)

<sup>2</sup> Assumed fractions of MeHg in exposure media (see text for details)

Soil 0.01

Plants 0.34

Invertebrates 0.17

Water 0

<sup>3</sup> Predicted using soil 95% UCLM and Insect BAF; see text)

**COPC Concentrations in Soil, Water, Plant Tissue and Insects:  
AWAR Locations - 2017  
(table based on Azimuth, 2006)**

	Units	Moisture Content <sup>1</sup> (%)	COPC Concentrations										
			Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Manganese	Total Mercury
<b>Soil (measured)</b>													
95% UCLM	mg/kg dw	-	0.050	2.447	35.510	0.292	0.038	36.537	6.357	9.920	5.499	216.168	0.003
<b>Lake Water (measured)</b>													
95% UCLM	mg/L	-	0.000	0.000	0.004	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.000
<b>Sedges (measured)</b>													
95% UCLM	mg/kg ww	42.70%	0.007	0.502	30.642	0.020	0.049	8.433	0.947	3.331	0.195	363.443	0.009
<b>Lichen (measured)</b>													
95% UCLM	mg/kg ww	15.89%	0.050	2.840	52.005	0.105	0.218	43.981	4.712	9.003	4.051	639.381	0.134
<b>Berries (measured)</b>													
95% UCLM	mg/kg ww	86.80%	0.001	0.014	1.454	0.001	0.021	0.121	0.013	0.673	0.005	35.669	0.001
<b>Insects (predicted)<sup>3</sup></b>													
95% UCLM	mg/kg dw		0.050	0.198	35.510	0.292	0.197	36.537	6.357	13.892	0.646	216.168	0.003
	mg/kg ww	65.00%	0.018	0.069	12.428	0.102	0.069	12.788	2.225	4.862	0.226	75.659	0.001

**Notes:**

na not available

nd no data

<sup>1</sup> Moisture content for plants represents average of available site-specific data; moisture content for insects based on Azimuth (2005); wet wt concentration = dry wt concentration\*(1-Moisture)

<sup>2</sup> Assumed fractions of MeHg in exposure media (see text for details)

Soil 0.01

Plants 0.34

Invertebrates 0.17

Water 0

<sup>3</sup> Predicted using soil 95% UCLM and Insect BAF; see text)

**COPC Concentrations in Soil, Water, Plant Tissue and Insects:  
AWAR Locations - 2017  
(table based on Azimuth, 2006)**

	Units	COPC Concentrations										
		Inorg-Hg <sup>2</sup>	MeHg <sup>2</sup>	Molybdenum	Nickel	Selenium	Stontium	Thallium	Tin	Uranium	Vanadium	Zinc
<b>Soil (measured)</b>												
95% UCLM	mg/kg dw	0.002	0.000	0.632	17.565	0.100	21.723	0.105	1.000	2.462	19.318	26.418
<b>Lake Water (measured)</b>												
95% UCLM	mg/L	0.000	0.000	0.000	0.000	0.000	0.028	0.000	0.000	0.000	0.000	0.002
<b>Sedges (measured)</b>												
95% UCLM	mg/kg ww	0.006	0.003	1.610	4.862	0.018	14.586	0.003	0.019	0.094	1.838	23.070
<b>Lichen (measured)</b>												
95% UCLM	mg/kg ww	0.089	0.046	0.480	19.203	0.134	38.834	0.028	0.079	0.730	10.071	48.647
<b>Berries (measured)</b>												
95% UCLM	mg/kg ww	0.000	0.000	0.364	0.005	0.479	0.000	0.034	0.002	0.026	2.604	2.670
<b>Insects (predicted)<sup>3</sup></b>												
95% UCLM	mg/kg dw	0.002	0.000	0.632	17.565	0.100	21.723	0.105	1.000	2.462	19.318	164.069
	mg/kg ww	0.001	0.000	0.221	6.148	0.035	7.603	0.037	0.350	0.862	6.761	57.424

**Notes:**

na not available

nd no data

<sup>1</sup> Moisture content for plants represents average of available site-specific data; moisture content for insects based on Azimuth (2005); wet wt concentration = dry wt concentration\*(1-Moisture)

<sup>2</sup> Assumed fractions of MeHg in exposure media (see text for details)

Soil 0.01

Plants 0.34

Invertebrates 0.17

Water 0

<sup>3</sup> Predicted using soil 95% UCLM and Insect BAF; see text)



**COPC Concentrations in Soil, Water, Plant Tissue and Insects:  
External Reference Locations - 2017  
(table based on Azimuth, 2006)**

	Units	Moisture Content <sup>1</sup> (%)	COPC Concentrations										
			Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Manganese	Total Mercury
<b>Soil (measured)</b>													
95% UCLM	mg/kg dw	-	0.081	11.460	29.992	0.347	0.078	100.689	10.514	11.687	8.178	286.793	0.009
<b>Lake Water (measured)</b>													
95% UCLM	mg/L	-	0.000	0.000	0.002	0.000	0.000	0.001	0.000	0.000	0.000	0.002	0.000
<b>Sedges (measured)</b>													
95% UCLM	mg/kg ww	42.70%	0.001	0.041	13.327	0.004	0.023	0.682	0.136	1.110	0.085	180.034	0.008
<b>Lichen (measured)</b>													
95% UCLM	mg/kg ww	15.89%	0.010	0.440	11.710	0.016	0.096	4.964	0.500	1.276	1.658	56.942	0.138
<b>Berries (measured)</b>													
95% UCLM	mg/kg ww	86.80%	0.001	0.002	0.808	0.001	0.004	0.037	0.006	0.519	0.003	6.499	0.001
<b>Insects (predicted)<sup>3</sup></b>													
95% UCLM	mg/kg dw		0.081	0.834	29.992	0.347	0.305	100.689	10.514	14.616	0.853	286.793	0.009
	mg/kg ww	65.00%	0.028	0.292	10.497	0.121	0.107	35.241	3.680	5.116	0.299	100.378	0.003

**Notes:**

na not available

nd no data

<sup>1</sup> Moisture content for plants represents average of available site-specific data; moisture content for insects based on Azimuth (2005); wet wt concentration = dry wt concentration\*(1-Moisture)

<sup>2</sup> Assumed fractions of MeHg in exposure media (see text for details)

Soil 0.01

Plants 0.34

Invertebrates 0.17

Water 0

<sup>3</sup> Predicted using soil 95% UCLM and Insect BAF; see text)

**COPC Concentrations in Soil, Water, Plant Tissue and Insects:  
External Reference Locations - 2017  
(table based on Azimuth, 2006)**

	Units	COPC Concentrations										
		Inorg-Hg <sup>2</sup>	MeHg <sup>2</sup>	Molybdenum	Nickel	Selenium	Stontium	Thallium	Tin	Uranium	Vanadium	Zinc
<b>Soil (measured)</b>												
95% UCLM	mg/kg dw	0.009	0.000	0.675	53.746	0.100	26.451	0.106	1.000	1.886	24.969	41.681
<b>Lake Water (measured)</b>												
95% UCLM	mg/L	0.000	0.000	0.000	0.001	0.000	0.008	0.000	0.000	0.000	0.000	0.002
<b>Sedges (measured)</b>												
95% UCLM	mg/kg ww	0.006	0.003	0.557	2.753	0.014	4.704	0.003	0.010	0.006	0.095	18.600
<b>Lichen (measured)</b>												
95% UCLM	mg/kg ww	0.091	0.047	0.105	7.642	0.094	5.762	0.008	0.027	0.051	0.828	13.645
<b>Berries (measured)</b>												
95% UCLM	mg/kg ww	0.000	0.000	0.282	0.005	0.322	0.000	0.035	0.000	0.010	0.784	1.320
<b>Insects (predicted)<sup>3</sup></b>												
95% UCLM	mg/kg dw	0.009	0.000	0.675	53.746	0.100	26.451	0.106	1.000	1.886	24.969	181.383
	mg/kg ww	0.003	0.000	0.236	18.811	0.035	9.258	0.037	0.350	0.660	8.739	63.484

**Notes:**

na not available

nd no data

<sup>1</sup> Moisture content for plants represents average of available site-specific data; moisture content for insects based on Azimuth (2005); wet wt concentration = dry wt concentration\*(1-Moisture)

<sup>2</sup> Assumed fractions of MeHg in exposure media (see text for details)

Soil 0.01

Plants 0.34

Invertebrates 0.17

Water 0

<sup>3</sup> Predicted using soil 95% UCLM and Insect BAF; see text)

## **Appendix B - References**

Azimuth (Azimuth Consulting Group Inc.). 2005. Post closure ecological risk assessment of the Teck Cominco Operations site. Prepared for: Teck Cominco Metals Ltd., Kimberley, BC.

## **Appendix C**

### **Toxicity Reference Values and Hazard Quotient Calculation**

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**Dietary exposure and HQ calculations for Northern red-backed vole**  
**Onsite - 2017**  
(table based on Azimuth, 2006)

Risk Assessment		Dietary											
Parameter	Preference	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Manganese	Total Hg	
<b>% Time</b>		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
<b>Dose</b> (mg/kg wet/day)	<b>Soil</b>	0.000	0.018	0.050	0.001	0.000	0.071	0.012	0.017	0.013	0.425	0.000	
	<b>Water</b>	0.0000	0.0001	0.0008	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0004	0.0000	
	Sedges	55%	0.000	0.029	1.206	0.001	0.002	0.382	0.027	0.145	0.032	14.544	0.001
	Lichens	0%	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Berries	40%	0.0001	0.0008	0.0473	0.0001	0.0002	0.0077	0.0007	0.0376	0.0004	0.4974	0.0000
	Insects	5%	0.000	0.002	0.094	0.001	0.001	0.134	0.023	0.036	0.002	0.805	0.000
	<b>Total Food</b>	100%	0.0006	0.0319	1.3475	0.0020	0.0033	0.5235	0.0507	0.2186	0.0350	15.8461	0.0006
	<b>Total Dose</b>		0.001	0.050	1.398	0.003	0.003	0.594	0.063	0.235	0.048	16.272	0.001
<b>Relative Contribution</b> (% of total dose)	<b>Soil</b>	18%	35%	4%	23%	3%	12%	19%	7%	27%	3%	3%	
	<b>Water</b>	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Sedges	39%	58%	86%	30%	69%	64%	43%	62%	67%	89%	88%	
	Lichens	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Berries	7%	2%	3%	2%	6%	1%	1%	16%	1%	3%	4%	
	Insects	34%	5%	7%	44%	22%	23%	36%	15%	5%	5%	5%	
	<b>Total Food</b>	80%	64%	96%	76%	97%	88%	81%	93%	72%	97%	97%	
<b>TRVs</b> (mg/kg wet/day)	<b>NOEL<sub>TRV</sub></b>	108.5	0.1	11.0	1.3	2.0	6.7	0.3	31.1	16.4	180.0	na	
	<b>LOEL<sub>TRV</sub></b>	216.4	1.4	40.5	na	19.7	26.9	7.0	40.3	163.6	580.9	na	
<b>Hazard Quotients</b> (unitless)	<b>HQ (NOEL)</b>	0.0	0.4	0.1	0.0	0.0	0.1	0.2	0.0	0.0	0.1	na	
	<b>HQ (LOEL)</b>	0.0	0.0	0.0	na	0.0	0.0	0.0	0.0	0.0	0.0	na	

**Notes:**  
na - not available

**Dietary exposure and HQ calculations for Northern red-backed vole**  
**Onsite - 2017**  
(table based on Azimuth, 2006)

<b>Risk Assessment</b>		<b>Dietary</b>											
<b>Parameter</b>	<b>Preference</b>	<b>Inorg-Hg</b>	<b>MeHg</b>	<b>Molybdenum</b>	<b>Nickel</b>	<b>Selenium</b>	<b>Strontium</b>	<b>Thallium</b>	<b>Tin</b>	<b>Uranium</b>	<b>Vanadium</b>	<b>Zinc</b>	
<b>% Time</b>		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
<b>Dose</b> (mg/kg wet/day)	<b>Soil</b>		0.000	0.000	0.001	0.038	0.000	0.016	0.000	0.001	0.004	0.027	0.051
	<b>Water</b>		0.0000	0.0000	0.0000	0.0001	0.0000	0.0037	0.0000	0.0000	0.0000	0.0001	0.0004
	Sedges	55%	0.000	0.000	0.054	0.231	0.001	0.496	0.000	0.001	0.004	0.051	1.080
	Lichens	0%	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Berries	40%	0.0000	0.0000	0.0109	0.0003	0.0180	0.0000	0.0025	0.0001	0.0009	0.0605	0.0857
	Insects	5%	0.000	0.000	0.002	0.073	0.000	0.030	0.000	0.002	0.007	0.051	0.426
	<b>Total Food</b>	100%	0.0004	0.0002	0.0672	0.3037	0.0194	0.5269	0.0031	0.0035	0.0113	0.1626	1.5923
	<b>Total Dose</b>		0.000	0.000	0.068	0.342	0.019	0.547	0.003	0.005	0.015	0.190	1.644
<b>Relative Contribution</b> (% of total dose)	<b>Soil</b>		4%	0%	2%	11%	1%	3%	5%	26%	24%	14%	3%
	<b>Water</b>		0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%
	Sedges		84%	95%	79%	67%	6%	91%	8%	22%	25%	27%	66%
	Lichens		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Berries		4%	4%	16%	0%	92%	0%	76%	2%	6%	32%	5%
	Insects		8%	0%	3%	21%	1%	6%	10%	50%	45%	27%	26%
	<b>Total Food</b>		96%	100%	98%	89%	99%	96%	94%	73%	76%	86%	97%
<b>TRVs</b> (mg/kg wet/day)	<b>NOEL<sub>TRV</sub></b>		2.7	0.0	0.3	81.8	0.4	537.9	0.0	25.9	3.3	0.4	327.2
	<b>LOEL<sub>TRV</sub></b>		na	0.1	2.9	163.6	0.7	na	0.2	38.7	6.7	4.0	654.5
<b>Hazard Quotients</b> (unitless)	<b>HQ (NOAEL)</b>		0.0	0.0	0.2	0.0	0.0	0.0	0.2	0.0	0.0	0.5	0.0
	<b>HQ (LOAEL)</b>		na	0.0	0.0	0.0	0.0	0.0	na	0.0	0.0	0.0	0.0

**Notes:**

na - not available

**Dietary exposure and HQ calculations for Northern red-backed vole**  
**Near-site - 2017**  
(table based on Azimuth, 2006)

Risk Assessment		Dietary											
Parameter	Preference	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Manganese	Total Hg	
<b>% Time</b> (unitless)		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
<b>Dose</b> (mg/kg wet/day)	<b>Soil</b>	0.000	0.009	0.046	0.001	0.000	0.062	0.008	0.011	0.010	0.339	0.000	
	<b>Water</b>	0.0000	0.0000	0.0006	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0003	0.0000	
	Sedges	55%	0.000	0.011	1.193	0.001	0.001	0.194	0.014	0.086	0.016	11.463	0.001
	Lichens	0%	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Berries	40%	0.0001	0.0004	0.0707	0.0001	0.0005	0.0043	0.0004	0.0359	0.0003	0.8264	0.0000
	Insects	5%	0.000	0.001	0.087	0.001	0.001	0.118	0.015	0.032	0.002	0.642	0.000
	<b>Total Food</b>	100%	0.0004	0.0131	1.3506	0.0021	0.0024	0.3164	0.0300	0.1533	0.0181	12.9312	0.0006
	<b>Total Dose</b>		0.000	0.022	1.397	0.003	0.003	0.379	0.038	0.164	0.028	13.271	0.001
<b>Relative Contribution</b> (% of total dose)	<b>Soil</b>	14%	40%	3%	20%	3%	16%	21%	7%	36%	3%	4%	
	<b>Water</b>	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Sedges	40%	52%	85%	39%	49%	51%	38%	52%	56%	86%	83%	
	Lichens	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Berries	17%	2%	5%	2%	21%	1%	1%	22%	1%	6%	4%	
	Insects	26%	6%	6%	38%	26%	31%	40%	19%	7%	5%	8%	
	<b>Total Food</b>	83%	60%	97%	79%	97%	84%	79%	93%	64%	97%	95%	
<b>TRVs</b> (mg/kg wet/day)	<b>NOEL<sub>TRV</sub></b>	108.5	0.1	11.0	1.3	2.0	6.7	0.3	31.1	16.4	180.0	na	
	<b>LOEL<sub>TRV</sub></b>	216.4	1.4	40.5	na	19.7	26.9	7.0	40.3	163.6	580.9	na	
<b>Hazard Quotients</b> (unitless)	<b>HQ (NOEL)</b>	0.0	0.2	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.1	na	
	<b>HQ (LOEL)</b>	0.0	0.0	0.0	na	0.0	0.0	0.0	0.0	0.0	0.0	na	

**Notes:**

na - not available

**Dietary exposure and HQ calculations for Northern red-backed vole**  
**Near-site - 2017**  
(table based on Azimuth, 2006)

<b>Risk Assessment</b>		<b>Dietary</b>										
<b>Parameter</b>	<b>Preference</b>	<b>Inorg-Hg</b>	<b>MeHg</b>	<b>Molybdenum</b>	<b>Nickel</b>	<b>Selenium</b>	<b>Strontium</b>	<b>Thallium</b>	<b>Tin</b>	<b>Uranium</b>	<b>Vanadium</b>	<b>Zinc</b>
<b>% Time</b> (unitless)		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
<b>Dose</b> (mg/kg wet/day)	<b>Soil</b>	0.000	0.000	0.001	0.027	0.000	0.016	0.000	0.001	0.004	0.023	0.043
	<b>Water</b>	0.0000	0.0000	0.0000	0.0001	0.0000	0.0024	0.0000	0.0000	0.0000	0.0001	0.0004
	Sedges	55%	0.000	0.000	0.042	0.141	0.001	0.388	0.000	0.001	0.004	0.892
	Lichens	0%	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Berries	40%	0.0000	0.0000	0.0106	0.0003	0.0215	0.0000	0.0027	0.0001	0.0007	0.0709
	Insects	5%	0.000	0.000	0.002	0.051	0.000	0.029	0.000	0.002	0.008	0.410
	<b>Total Food</b>	100%	0.0004	0.0002	0.0544	0.1924	0.0226	0.4176	0.0033	0.0032	0.0125	1.3740
	<b>Total Dose</b>		0.000	0.000	0.056	0.220	0.023	0.436	0.003	0.004	0.017	1.417
<b>Relative Contribution</b> (% of total dose)	<b>Soil</b>	6%	0%	2%	12%	1%	4%	5%	28%	26%	15%	3%
	<b>Water</b>	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%
	Sedges	78%	95%	75%	64%	4%	89%	8%	17%	22%	14%	63%
	Lichens	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Berries	4%	5%	19%	0%	94%	0%	78%	1%	4%	44%	5%
	Insects	12%	0%	4%	23%	1%	7%	10%	53%	48%	27%	29%
	<b>Total Food</b>	94%	100%	98%	88%	99%	96%	95%	71%	74%	85%	97%
<b>TRVs</b> (mg/kg wet/day)	<b>NOEL<sub>TRV</sub></b>	2.7	0.0	0.3	81.8	0.4	537.9	0.0	25.9	3.3	0.4	327.2
	<b>LOEL<sub>TRV</sub></b>	na	0.1	2.9	163.6	0.7	na	0.2	38.7	6.7	4.0	654.5
<b>Hazard Quotients</b> (unitless)	<b>HQ (NOAEL)</b>	0.0	0.0	0.2	0.0	0.1	0.0	0.2	0.0	0.0	0.4	0.0
	<b>HQ (LOAEL)</b>	na	0.0	0.0	0.0	0.0	na	0.0	0.0	0.0	0.0	0.0

**Notes:**

na - not available



**Dietary exposure and HQ calculations for Northern red-backed vole**  
**AWAR - 2017**  
(table based on Azimuth, 2006)

Risk Assessment		Dietary											
Parameter	Preference	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Manganese	Total Hg	
<b>% Time</b> (unitless)		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
<b>Dose</b> (mg/kg wet/day)	<b>Soil</b>	0.000	0.003	0.044	0.000	0.000	0.046	0.008	0.012	0.007	0.270	0.000	
	<b>Water</b>	0.0000	0.0001	0.0011	0.0000	0.0000	0.0000	0.0000	0.0004	0.0000	0.0003	0.0000	
	Sedges	55%	0.001	0.037	2.275	0.002	0.004	0.626	0.070	0.247	0.015	26.986	0.001
	Lichens	0%	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Berries	40%	0.0001	0.0008	0.0785	0.0001	0.0012	0.0065	0.0007	0.0364	0.0003	1.9261	0.0000
	Insects	5%	0.000	0.000	0.084	0.001	0.000	0.086	0.015	0.033	0.002	0.511	0.000
	<b>Total Food</b>	100%	0.0007	0.0385	2.4376	0.0023	0.0053	0.7190	0.0861	0.3165	0.0163	29.4225	0.0007
	<b>Total Dose</b>		0.001	0.042	2.483	0.003	0.005	0.765	0.094	0.329	0.023	29.693	0.001
<b>Relative Contribution</b> (% of total dose)	<b>Soil</b>	8%	7%	2%	14%	1%	6%	8%	4%	30%	1%	0%	
	<b>Water</b>	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Sedges	69%	89%	92%	58%	69%	82%	75%	75%	63%	91%	95%	
	Lichens	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Berries	7%	2%	3%	2%	22%	1%	1%	11%	1%	6%	4%	
	Insects	15%	1%	3%	26%	9%	11%	16%	10%	7%	2%	1%	
	<b>Total Food</b>	91%	92%	98%	86%	99%	94%	92%	96%	70%	99%	99%	
<b>TRVs</b> (mg/kg wet/day)	<b>NOEL<sub>TRV</sub></b>	108.5	0.1	11.0	1.3	2.0	6.7	0.3	31.1	16.4	180.0	na	
	<b>LOEL<sub>TRV</sub></b>	216.4	1.4	40.5	na	19.7	26.9	7.0	40.3	163.6	580.9	na	
<b>Hazard Quotients</b> (unitless)	<b>HQ (NOAEL)</b>	0.0	0.3	0.2	0.0	0.0	0.1	0.3	0.0	0.0	0.2	na	
	<b>HQ (LOAEL)</b>	0.0	0.0	0.1	na	0.0	0.0	0.0	0.0	0.0	0.1	na	

**Notes:**

na - not available

**Dietary exposure and HQ calculations for Northern red-backed vole**  
**AWAR - 2017**  
(table based on Azimuth, 2006)

Risk Assessment		Dietary	Inorg-Hg	MeHg	Molybdenum	Nickel	Selenium	Strontium	Thallium	Tin	Uranium	Vanadium	Zinc
Parameter	Preference												
<b>% Time</b> (unitless)			100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
<b>Dose</b> (mg/kg wet/day)	<b>Soil</b>		0.000	0.000	0.001	0.022	0.000	0.027	0.000	0.001	0.003	0.024	0.033
	<b>Water</b>		0.0000	0.0000	0.0001	0.0001	0.0000	0.0070	0.0000	0.0000	0.0000	0.0001	0.0004
	Sedges	55%	0.000	0.000	0.120	0.361	0.001	1.083	0.000	0.001	0.007	0.136	1.713
	Lichens	0%	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Berries	40%	0.0000	0.0000	0.0197	0.0003	0.0259	0.0000	0.0018	0.0001	0.0014	0.1406	0.1442
	Insects	5%	0.000	0.000	0.001	0.041	0.000	0.051	0.000	0.002	0.006	0.046	0.388
	<b>Total Food</b>	100%	0.0004	0.0002	0.1407	0.4028	0.0274	1.1344	0.0023	0.0039	0.0142	0.3227	2.2447
	<b>Total Dose</b>		0.000	0.000	0.142	0.425	0.028	1.169	0.002	0.005	0.017	0.347	2.278
<b>Relative Contribution</b> (% of total dose)	<b>Soil</b>		1%	0%	1%	5%	0%	2%	5%	24%	18%	7%	1%
	<b>Water</b>		0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%
	Sedges		94%	96%	84%	85%	5%	93%	10%	28%	40%	39%	75%
	Lichens		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Berries		4%	4%	14%	0%	94%	0%	75%	2%	8%	41%	6%
	Insects		1%	0%	1%	10%	1%	4%	10%	46%	34%	13%	17%
	<b>Total Food</b>		99%	100%	99%	95%	100%	97%	95%	76%	82%	93%	99%
<b>TRVs</b> (mg/kg wet/day)	<b>NOEL<sub>TRV</sub></b>		2.7	0.0	0.3	81.8	0.4	537.9	0.0	25.9	3.3	0.4	327.2
	<b>LOEL<sub>TRV</sub></b>		na	0.1	2.9	163.6	0.7	na	0.2	38.7	6.7	4.0	654.5
<b>Hazard Quotients</b> (unitless)	<b>HQ (NOAEL)</b>		0.0	0.0	0.5	0.0	0.1	0.0	0.2	0.0	0.0	0.9	0.0
	<b>HQ (LOAEL)</b>		na	0.0	0.0	0.0	0.0	na	0.0	0.0	0.0	0.1	0.0

**Notes:**

na - not available

**Dietary exposure and HQ calculations for Northern red-backed vole**  
**External Reference - 2017**  
(table based on Azimuth, 2006)

Risk Assessment		Dietary											
Parameter	Preference	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Manganese	Total Hg	
<b>% Time</b> (unitless)		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
<b>Dose</b> (mg/kg wet/day)	<b>Soil</b>	0.000	0.014	0.037	0.000	0.000	0.126	0.013	0.015	0.010	0.358	0.000	
	<b>Water</b>	0.0000	0.0000	0.0005	0.0000	0.0000	0.0002	0.0000	0.0001	0.0000	0.0004	0.0000	
	Sedges	55%	0.000	0.003	0.990	0.000	0.002	0.051	0.010	0.082	0.006	13.368	0.001
	Lichens	0%	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Berries	40%	0.0001	0.0001	0.0436	0.0001	0.0002	0.0020	0.0003	0.0280	0.0001	0.3510	0.0000
	Insects	5%	0.000	0.002	0.071	0.001	0.001	0.238	0.025	0.035	0.002	0.678	0.000
	<b>Total Food</b>	100%	0.0003	0.0052	1.1041	0.0012	0.0027	0.2905	0.0353	0.1450	0.0085	14.3960	0.0007
	<b>Total Dose</b>		0.000	0.020	1.142	0.002	0.003	0.416	0.048	0.160	0.019	14.755	0.001
<b>Relative Contribution</b> (% of total dose)	<b>Soil</b>	23%	73%	3%	27%	4%	30%	27%	9%	55%	2%	2%	
	<b>Water</b>	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Sedges	20%	16%	87%	18%	63%	12%	21%	52%	34%	91%	91%	
	Lichens	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Berries	12%	1%	4%	3%	8%	0%	1%	18%	1%	2%	4%	
	Insects	43%	10%	6%	51%	26%	57%	51%	22%	11%	5%	3%	
	<b>Total Food</b>	75%	26%	97%	73%	96%	70%	73%	91%	45%	98%	98%	
<b>TRVs</b> (mg/kg wet/day)	<b>NOEL<sub>TRV</sub></b>	108.5	0.1	11.0	1.3	2.0	6.7	0.3	31.1	16.4	180.0	na	
	<b>LOEL<sub>TRV</sub></b>	216.4	1.4	40.5	na	19.7	26.9	7.0	40.3	163.6	580.9	na	
<b>Hazard Quotients</b> (unitless)	<b>HQ (NOEL)</b>	0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.1	na	
	<b>HQ (LOEL)</b>	0.0	0.0	0.0	na	0.0	0.0	0.0	0.0	0.0	0.0	na	

**Notes:**

na - not available

**Dietary exposure and HQ calculations for Northern red-backed vole**  
**External Reference - 2017**  
 (table based on Azimuth, 2006)

Risk Assessment		Dietary											
Parameter	Preference	Inorg-Hg	MeHg	Molybdenum	Nickel	Selenium	Strontium	Thallium	Tin	Uranium	Vanadium	Zinc	
<b>% Time</b> (unitless)		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
<b>Dose</b> (mg/kg wet/day)	<b>Soil</b>	0.000	0.000	0.001	0.067	0.000	0.033	0.000	0.001	0.002	0.031	0.052	
	<b>Water</b>	0.0000	0.0000	0.0000	0.0001	0.0000	0.0021	0.0000	0.0000	0.0000	0.0001	0.0005	
	Sedges	55%	0.000	0.000	0.041	0.204	0.001	0.349	0.000	0.001	0.000	0.007	1.381
	Lichens	0%	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
	Berries	40%	0.0000	0.0000	0.0152	0.0003	0.0174	0.0000	0.0019	0.0000	0.0005	0.0424	0.0713
	Insects	5%	0.000	0.000	0.002	0.127	0.000	0.062	0.000	0.002	0.004	0.059	0.429
	<b>Total Food</b>	100%	0.0004	0.0002	0.0582	0.3316	0.0186	0.4118	0.0024	0.0031	0.0054	0.1084	1.8809
	<b>Total Dose</b>		0.000	0.000	0.059	0.399	0.019	0.447	0.003	0.004	0.008	0.140	1.933
<b>Relative Contribution</b> (% of total dose)	<b>Soil</b>	2%	0%	1%	17%	1%	7%	5%	29%	30%	22%	3%	
	<b>Water</b>	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Sedges	89%	96%	70%	51%	5%	78%	9%	17%	6%	5%	71%	
	Lichens	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Berries	4%	4%	26%	0%	93%	0%	76%	0%	7%	30%	4%	
	Insects	4%	0%	3%	32%	1%	14%	10%	54%	57%	42%	22%	
	<b>Total Food</b>	98%	100%	99%	83%	99%	92%	95%	71%	70%	78%	97%	
<b>TRVs</b> (mg/kg wet/day)	<b>NOEL<sub>TRV</sub></b>	2.7	0.0	0.3	81.8	0.4	537.9	0.0	25.9	3.3	0.4	327.2	
	<b>LOEL<sub>TRV</sub></b>	na	0.1	2.9	163.6	0.7	na	0.2	38.7	6.7	4.0	654.5	
<b>Hazard Quotients</b> (unitless)	<b>HQ (NOEL)</b>	0.0	0.0	0.2	0.0	0.0	0.0	0.2	0.0	0.0	0.4	0.0	
	<b>HQ (LOEL)</b>	na	0.0	0.0	0.0	0.0	na	0.0	0.0	0.0	0.0	0.0	

**Notes:**  
 na - not available

**Dietary exposure and HQ calculations for caribou**  
**Onsite+Near-site - 2017**  
 (table based on Azimuth, 2006)

<b>Risk Assessment</b>												
<b>Parameter</b>	<b>Dietary Preference</b>	<b>Antimony</b>	<b>Arsenic</b>	<b>Barium</b>	<b>Beryllium</b>	<b>Cadmium</b>	<b>Chromium</b>	<b>Cobalt</b>	<b>Copper</b>	<b>Lead</b>	<b>Manganese</b>	<b>Total Hg</b>
<b>% Time</b> (unitless)		33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%
<b>Dose</b> (mg/kg wet/day)	<b>Soil</b>	0.000	0.015	0.044	0.001	0.000	0.113	0.013	0.015	0.011	0.395	0.000
	<b>Water</b>	0.00000	0.00001	0.00015	0.00000	0.00000	0.00003	0.00000	0.00002	0.00000	0.00011	0.00000
	Sedges	30%	0.0000	0.0014	0.1563	0.0001	0.0003	0.0199	0.0021	0.0141	0.0018	1.9803
	Lichens	65%	0.000	0.029	0.342	0.001	0.002	0.364	0.021	0.049	0.048	1.999
	Berries	5%	0.00000	0.00001	0.00164	0.00000	0.00001	0.00012	0.00001	0.00106	0.00001	0.01502
	Insects	0%	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	<b>Total Food</b>	100%	0.0004	0.0299	0.5005	0.0010	0.0026	0.3837	0.0234	0.0645	0.0498	3.9944
	<b>Total Dose</b>		0.000	0.045	0.544	0.001	0.003	0.497	0.036	0.080	0.061	4.389
<b>Relative Contribution</b> (% of total dose)	<b>Soil</b>	22%	33%	8%	35%	4%	23%	36%	19%	19%	9%	0%
	<b>Water</b>	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Sedges	4%	3%	29%	5%	10%	4%	6%	18%	3%	45%	3%
	Lichens	72%	64%	63%	60%	86%	73%	58%	62%	78%	46%	97%
	Berries	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%
	Insects	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	<b>Total Food</b>	77%	67%	92%	65%	96%	77%	64%	81%	81%	91%	100%
<b>TRVs</b> (mg/kg wet/day)	<b>NOEL<sub>TRV</sub></b>	13.9	0.0	1.4	0.2	0.3	0.9	0.0	4.0	2.1	23.0	na
	<b>LOEL<sub>TRV</sub></b>	27.7	0.2	5.2	na	2.5	3.4	0.9	5.1	20.9	74.2	na
<b>Hazard Quotients</b> (unitless)	<b>HQ (NOAEL)</b>	0.0	2.5	0.4	0.0	0.0	0.6	0.9	0.0	0.0	0.2	na
	<b>HQ (LOAEL)</b>	0.0	0.3	0.1	na	0.0	0.1	0.0	0.0	0.0	0.1	na

**Notes:**

na - not available

**Dietary exposure and HQ calculations for caribou**  
**Onsite+Near-site - 2017**  
 (table based on Azimuth, 2006)

<b>Risk Assessment</b>												
<b>Parameter</b>	<b>Dietary Preference</b>	<b>Inorg-Hg</b>	<b>MeHg</b>	<b>Molybdenum</b>	<b>Nickel</b>	<b>Selenium</b>	<b>Strontium</b>	<b>Thallium</b>	<b>Tin</b>	<b>Uranium</b>	<b>Vanadium</b>	<b>Zinc</b>
<b>% Time</b> (unitless)		33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%
<b>Dose</b> (mg/kg wet/day)	<b>Soil</b>	0.000	0.000	0.001	0.060	0.000	0.029	0.000	0.001	0.003	0.031	0.054
	<b>Water</b>	0.00000	0.00000	0.00001	0.00003	0.00000	0.00068	0.00000	0.00000	0.00000	0.00002	0.00011
	Sedges	30%	0.0001	0.0000	0.0065	0.0300	0.0002	0.0568	0.0000	0.0001	0.0026	0.1868
	Lichens	65%	0.002	0.001	0.006	0.225	0.002	0.180	0.000	0.001	0.046	0.362
	Berries	5%	0.00000	0.00000	0.00047	0.00001	0.00062	0.00000	0.00007	0.00000	0.00168	0.00252
	Insects	0%	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	<b>Total Food</b>	100%	0.0022	0.0011	0.0127	0.2547	0.0030	0.2373	0.0004	0.0009	0.0498	0.5512
	<b>Total Dose</b>		0.002	0.001	0.014	0.314	0.003	0.267	0.001	0.002	0.081	0.605
<b>Relative Contribution</b> (% of total dose)	<b>Soil</b>	1%	0%	7%	19%	4%	11%	28%	60%	46%	39%	9%
	<b>Water</b>	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Sedges	3%	3%	47%	10%	5%	21%	6%	5%	3%	3%	31%
	Lichens	97%	97%	42%	71%	71%	68%	53%	35%	51%	56%	60%
	Berries	0%	0%	3%	0%	20%	0%	13%	0%	0%	2%	0%
	Insects	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	<b>Total Food</b>	99%	100%	93%	81%	96%	89%	72%	40%	54%	61%	91%
<b>TRVs</b> (mg/kg wet/day)	<b>NOEL<sub>TRV</sub></b>	0.3	0.0	0.0	10.5	0.1	68.7	0.0	3.3	0.4	0.1	41.8
	<b>LOEL<sub>TRV</sub></b>	na	0.0	0.4	20.9	0.1	na	0.0	4.9	0.9	0.5	83.6
<b>Hazard Quotients</b> (unitless)	<b>HQ (NOAEL)</b>	0.0	0.2	0.4	0.0	0.1	0.0	0.3	0.0	0.0	1.6	0.0
	<b>HQ (LOAEL)</b>	na	0.1	0.0	0.0	0.0	na	0.0	0.0	0.0	0.2	0.0

**Notes:**  
 na - not available

**Dietary exposure and HQ calculations for caribou**  
**AWAR - 2017**  
(table based on Azimuth, 2006)

<b>Risk Assessment</b>												
<b>Parameter</b>	<b>Dietary Preference</b>	<b>Antimony</b>	<b>Arsenic</b>	<b>Barium</b>	<b>Beryllium</b>	<b>Cadmium</b>	<b>Chromium</b>	<b>Cobalt</b>	<b>Copper</b>	<b>Lead</b>	<b>Manganese</b>	<b>Total Hg</b>
<b>% Time</b> (unitless)		33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%
<b>Dose</b> (mg/kg wet/day)	<b>Soil</b>	0.000	0.011	0.043	0.000	0.000	0.107	0.012	0.015	0.010	0.355	0.000
	<b>Water</b>	0.00000	0.00001	0.00017	0.00000	0.00000	0.00003	0.00000	0.00004	0.00000	0.00009	0.00000
	Sedges	30%	0.0000	0.0022	0.2121	0.0001	0.0004	0.0361	0.0045	0.0205	0.0014	0.0001
	Lichens	65%	0.001	0.030	0.604	0.001	0.003	0.431	0.046	0.059	6.014	0.003
	Berries	5%	0.00000	0.00001	0.00190	0.00000	0.00002	0.00012	0.00002	0.00106	0.00001	0.02994
	Insects	0%	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	<b>Total Food</b>	100%	0.0006	0.0319	0.8177	0.0012	0.0037	0.4669	0.0501	0.1139	0.0604	8.7244
	<b>Total Dose</b>		0.001	0.043	0.861	0.002	0.004	0.574	0.062	0.129	0.070	9.079
<b>Relative Contribution</b> (% of total dose)	<b>Soil</b>	14%	26%	5%	27%	2%	19%	20%	12%	14%	4%	0%
	<b>Water</b>	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Sedges	5%	5%	25%	6%	9%	6%	7%	16%	2%	30%	3%
	Lichens	80%	69%	70%	67%	88%	75%	73%	72%	84%	66%	97%
	Berries	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%
	Insects	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	<b>Total Food</b>	86%	74%	95%	73%	98%	81%	80%	88%	86%	96%	100%
<b>TRVs</b> (mg/kg wet/day)	<b>NOEL<sub>TRV</sub></b>	13.9	0.0	1.4	0.2	0.3	0.9	0.0	4.0	2.1	23.0	na
	<b>LOAEL<sub>TRV</sub></b>	27.7	0.2	5.2	na	2.5	3.4	0.9	5.1	20.9	74.2	na
<b>Hazard Quotients</b> (unitless)	<b>HQ (NOAEL)</b>	0.0	2.4	0.6	0.0	0.0	0.7	1.5	0.0	0.0	0.4	na
	<b>HQ (LOAEL)</b>	0.0	0.2	0.2	na	0.0	0.2	0.1	0.0	0.0	0.1	na

**Notes:**

na - not available

**Dietary exposure and HQ calculations for caribou**  
**AWAR - 2017**  
(table based on Azimuth, 2006)

<b>Risk Assessment</b>												
<b>Parameter</b>	<b>Dietary Preference</b>	<b>Inorg-Hg</b>	<b>MeHg</b>	<b>Molybdenum</b>	<b>Nickel</b>	<b>Selenium</b>	<b>Strontium</b>	<b>Thallium</b>	<b>Tin</b>	<b>Uranium</b>	<b>Vanadium</b>	<b>Zinc</b>
<b>% Time</b> (unitless)		33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%
<b>Dose</b> (mg/kg wet/day)	<b>Soil</b>	0.000	0.000	0.001	0.056	0.000	0.034	0.000	0.001	0.003	0.031	0.049
	<b>Water</b>	0.00000	0.00000	0.00001	0.00003	0.00000	0.00095	0.00000	0.00000	0.00000	0.00002	0.00011
	Sedges	30%	0.0001	0.0000	0.0101	0.0384	0.0002	0.0887	0.0000	0.0001	0.0004	0.0075
	Lichens	65%	0.002	0.001	0.006	0.277	0.003	0.403	0.000	0.001	0.007	0.094
	Berries	5%	0.00000	0.00000	0.00057	0.00001	0.00069	0.00000	0.00006	0.00000	0.00003	0.00257
	Insects	0%	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	<b>Total Food</b>	100%	0.0022	0.0012	0.0162	0.3150	0.0035	0.4913	0.0005	0.0012	0.0071	0.1037
	<b>Total Dose</b>		0.002	0.001	0.017	0.371	0.004	0.526	0.001	0.003	0.010	0.135
<b>Relative Contribution</b> (% of total dose)	<b>Soil</b>	0%	0%	5%	15%	4%	6%	24%	52%	28%	23%	6%
	<b>Water</b>	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Sedges	3%	3%	59%	10%	5%	17%	6%	6%	4%	6%	25%
	Lichens	97%	97%	32%	74%	72%	77%	59%	42%	67%	69%	69%
	Berries	0%	0%	3%	0%	19%	0%	11%	0%	0%	2%	0%
	Insects	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	<b>Total Food</b>	100%	100%	95%	85%	96%	93%	76%	47%	72%	77%	94%
<b>TRVs</b> (mg/kg wet/day)	<b>NOEL<sub>TRV</sub></b>	0.3	0.0	0.0	10.5	0.1	68.7	0.0	3.3	0.4	0.1	41.8
	<b>LOAEL<sub>TRV</sub></b>	na	0.0	0.4	20.9	0.1	na	0.0	4.9	0.9	0.5	83.6
<b>Hazard Quotients</b> (unitless)	<b>HQ (NOAEL)</b>	0.0	0.2	0.5	0.0	0.1	0.0	0.3	0.0	0.0	2.6	0.0
	<b>HQ (LOAEL)</b>	na	0.1	0.0	0.0	0.0	na	0.0	0.0	0.0	0.3	0.0

**Notes:**

na - not available



**Dietary exposure and HQ calculations for caribou**  
**External Reference - 2017**  
 (table based on Azimuth, 2006)

Risk Assessment		Dietary											
Parameter	Preference	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Manganese	Total Hg	
<b>% Time</b> (unitless)		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
<b>Dose</b> (mg/kg wet/day)	<b>Soil</b>	0.000	0.015	0.040	0.000	0.000	0.136	0.014	0.016	0.011	0.386	0.000	
	<b>Water</b>	0.00000	0.00001	0.00012	0.00000	0.00000	0.00004	0.00000	0.00002	0.00000	0.00011	0.00000	
	Sedges	30%	0.0000	0.0005	0.1485	0.0000	0.0003	0.0076	0.0015	0.0124	0.0009	2.0058	0.0001
	Lichens	65%	0.000	0.011	0.283	0.000	0.002	0.120	0.012	0.031	0.040	1.375	0.003
	Berries	5%	0.00000	0.00000	0.00150	0.00000	0.00001	0.00007	0.00001	0.00096	0.00000	0.01207	0.00000
	Insects	0%	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	<b>Total Food</b>	100%	0.0002	0.0111	0.4327	0.0004	0.0026	0.1275	0.0136	0.0441	0.0410	3.3925	0.0034
	<b>Total Dose</b>		0.000	0.027	0.473	0.001	0.003	0.263	0.028	0.060	0.052	3.779	0.003
<b>Relative Contribution</b> (% of total dose)	<b>Soil</b>	30%	58%	9%	52%	4%	52%	51%	26%	21%	10%	0%	
	<b>Water</b>	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Sedges	4%	2%	31%	5%	10%	3%	5%	21%	2%	53%	3%	
	Lichens	65%	40%	60%	43%	86%	46%	43%	51%	77%	36%	97%	
	Berries	1%	0%	0%	0%	0%	0%	0%	2%	0%	0%	0%	
	Insects	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	<b>Total Food</b>	69%	42%	91%	48%	96%	48%	49%	74%	79%	90%	100%	
	<b>TRVs</b> (mg/kg wet/day)	<b>NOEL<sub>TRV</sub></b>	13.9	0.0	1.4	0.2	0.3	0.9	0.0	4.0	2.1	23.0	na
	<b>LOAEL<sub>TRV</sub></b>	27.7	0.2	5.2	na	2.5	3.4	0.9	5.1	20.9	74.2	na	
<b>Hazard Quotients</b> (unitless)	<b>HQ (NOAEL)</b>	0.0	1.5	0.3	0.0	0.0	0.3	0.7	0.0	0.0	0.2	na	
	<b>HQ (LOAEL)</b>	0.0	0.1	0.1	na	0.0	0.1	0.0	0.0	0.0	0.1	na	

**Notes:**

na - not available

**Dietary exposure and HQ calculations for caribou**  
**External Reference - 2017**  
 (table based on Azimuth, 2006)

Risk Assessment		Dietary											
Parameter	Preference	Inorg-Hg	MeHg	Molybdenum	Nickel	Selenium	Strontium	Thallium	Tin	Uranium	Vanadium	Zinc	
<b>% Time</b> (unitless)		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
<b>Dose</b> (mg/kg wet/day)	<b>Soil</b>	0.000	0.000	0.001	0.072	0.000	0.036	0.000	0.001	0.003	0.034	0.056	
	<b>Water</b>	0.00000	0.00000	0.00001	0.00003	0.00000	0.00054	0.00000	0.00000	0.00000	0.00002	0.00011	
	Sedges	30%	0.0001	0.0000	0.0062	0.0307	0.0002	0.0524	0.0000	0.0001	0.0001	0.0011	0.2072
	Lichens	65%	0.002	0.001	0.003	0.184	0.002	0.139	0.000	0.001	0.001	0.020	0.329
	Berries	5%	0.00000	0.00000	0.00052	0.00001	0.00060	0.00000	0.00007	0.00000	0.00002	0.00146	0.00245
	Insects	0%	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	<b>Total Food</b>	100%	0.0023	0.0012	0.0093	0.2151	0.0030	0.1915	0.0003	0.0008	0.0013	0.0225	0.5391
	<b>Total Dose</b>		0.002	0.001	0.010	0.288	0.003	0.228	0.000	0.002	0.004	0.056	0.595
<b>Relative Contribution</b> (% of total dose)	<b>Soil</b>	1%	0%	9%	25%	4%	16%	33%	63%	66%	60%	9%	
	<b>Water</b>	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Sedges	3%	3%	61%	11%	5%	23%	8%	5%	2%	2%	35%	
	Lichens	97%	97%	25%	64%	72%	61%	45%	31%	32%	36%	55%	
	Berries	0%	0%	5%	0%	19%	0%	15%	0%	0%	3%	0%	
	Insects	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	<b>Total Food</b>	99%	100%	91%	75%	96%	84%	67%	36%	34%	40%	91%	
<b>TRVs</b> (mg/kg wet/day)	<b>NOEL<sub>TRV</sub></b>	0.3	0.0	0.0	10.5	0.1	68.7	0.0	3.3	0.4	0.1	41.8	
	<b>LOAEL<sub>TRV</sub></b>	na	0.0	0.4	20.9	0.1	na	0.0	4.9	0.9	0.5	83.6	
<b>Hazard Quotients</b> (unitless)	<b>HQ (NOAEL)</b>	0.0	0.2	0.3	0.0	0.1	0.0	0.2	0.0	0.0	1.1	0.0	
	<b>HQ (LOAEL)</b>	na	0.1	0.0	0.0	0.0	0.0	na	0.0	0.0	0.1	0.0	

**Notes:**

na - not available

**Dietary exposure and HQ calculations for Lapland longspur  
Onsite - 2017  
(table based on Azimuth, 2006)**

Risk Assessment		Dietary											
Parameter	Preference	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Manganese	Total Hg	
<b>% Time</b> (unitless)		33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	
<b>Dose</b> (mg/kg wet/day)	<b>Soil</b>	0.002	0.214	0.579	0.007	0.001	1.500	0.178	0.213	0.156	5.301	0.000	
	<b>Water</b>	0.0000	0.0000	0.0005	0.0000	0.0000	0.0001	0.0000	0.0001	0.0000	0.0003	0.0000	
	Sedges	25%	0.000	0.024	2.250	0.001	0.004	0.339	0.033	0.219	0.032	29.169	0.001
	Lichens	0%	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Berries	5%	0.0000	0.0002	0.0261	0.0000	0.0001	0.0023	0.0003	0.0182	0.0001	0.2328	0.0000
	Insects	70%	0.014	0.137	5.128	0.061	0.048	13.298	1.580	2.286	0.140	46.990	0.002
	<b>Total Food</b>	100%	0.0146	0.1621	7.4041	0.0620	0.0523	13.6391	1.6134	2.5232	0.1720	76.3919	0.0030
	<b>Total Dose</b>	0.016	0.376	7.983	0.069	0.054	15.139	1.792	2.736	0.328	81.693	0.003	
<b>Relative Contribution</b> (% of total dose)	<b>Soil</b>	10%	57%	7%	10%	3%	10%	10%	8%	48%	6%	6%	
	<b>Water</b>	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Sedges	2%	7%	28%	1%	8%	2%	2%	8%	10%	36%	40%	
	Lichens	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Berries	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	
	Insects	88%	37%	64%	89%	89%	88%	88%	84%	43%	58%	53%	
	<b>Total Food</b>	90%	43%	93%	90%	97%	90%	90%	92%	52%	94%	94%	
<b>TRVs</b> (mg/kg wet/day)	<b>NOEL<sub>TRV</sub></b>	9.8	2.5	21.0	0.1	1.5	1.0	2.4	47.0	1.1	977.0	na	
	<b>LOAEL<sub>TRV</sub></b>	11.3	7.4	42.0	na	20.0	5.0	4.7	61.7	11.3	na	na	
<b>Hazard Quotients</b> (unitless)	<b>HQ (NOAEL)</b>	0.0	0.2	0.4	1.0	0.0	15.1	0.8	0.1	0.3	0.1	na	
	<b>HQ (LOAEL)</b>	0.0	0.1	0.2	na	0.0	3.0	0.4	0.0	0.0	na	na	

**Notes:**

na - not available

**Dietary exposure and HQ calculations for Lapland longspur  
Onsite - 2017  
(table based on Azimuth, 2006)**

<b>Risk Assessment</b>												
<b>Parameter</b>	<b>Dietary Preference</b>	<b>Inorg-Hg</b>	<b>MeHg</b>	<b>Molybdenum</b>	<b>Nickel</b>	<b>Selenium</b>	<b>Strontium</b>	<b>Thallium</b>	<b>Tin</b>	<b>Uranium</b>	<b>Vanadium</b>	<b>Zinc</b>
<b>% Time</b> (unitless)		33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%
<b>Dose</b> (mg/kg wet/day)	<b>Soil</b>	0.000	0.000	0.013	0.803	0.002	0.383	0.002	0.017	0.038	0.415	0.720
	<b>Water</b>	0.0000	0.0000	0.0000	0.0001	0.0000	0.0021	0.0000	0.0000	0.0000	0.0001	0.0004
	Sedges	25%	0.001	0.000	0.097	0.002	0.844	0.000	0.002	0.003	0.046	2.718
	Lichens	0%	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Berries	5%	0.0000	0.0000	0.0080	0.0002	0.0103	0.0000	0.0012	0.0004	0.0282	0.0443
	Insects	70%	0.002	0.000	0.115	7.122	0.015	3.392	0.018	0.154	3.680	27.939
	<b>Total Food</b>	100%	0.0025	0.0005	0.2194	7.5738	0.0279	4.2352	0.0199	0.1561	3.7542	30.7018
	<b>Total Dose</b>		0.003	0.000	0.232	8.377	0.030	4.620	0.022	0.174	4.169	31.422
<b>Relative Contribution</b> (% of total dose)	<b>Soil</b>	7%	0%	6%	10%	6%	8%	9%	10%	10%	10%	2%
	<b>Water</b>	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Sedges	31%	95%	42%	5%	8%	18%	2%	1%	1%	1%	9%
	Lichens	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Berries	0%	1%	3%	0%	35%	0%	6%	0%	0%	1%	0%
	Insects	61%	4%	49%	85%	52%	73%	83%	89%	89%	88%	89%
	<b>Total Food</b>	93%	100%	94%	90%	94%	92%	91%	90%	90%	90%	98%
<b>TRVs</b> (mg/kg wet/day)	<b>NOEL<sub>TRV</sub></b>	0.5	0.0	3.5	77.4	0.4	26.3	0.2	6.8	16.0	11.4	14.5
	<b>LOAEL<sub>TRV</sub></b>	0.9	0.1	35.3	107.0	0.8	na	0.8	16.9	na	na	130.9
<b>Hazard Quotients</b> (unitless)	<b>HQ (NOAEL)</b>	0.0	0.1	0.1	0.1	0.1	0.2	0.1	0.0	0.0	0.4	2.2
	<b>HQ (LOAEL)</b>	0.0	0.0	0.0	0.1	0.0	na	0.0	0.0	na	na	0.2

**Notes:**

na - not available

**Dietary exposure and HQ calculations for Lapland longspur  
Near-site - 2017  
(table based on Azimuth, 2006)**

Risk Assessment		Dietary											
Parameter	Preference	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Manganese	Total Hg	
<b>% Time</b> (unitless)		33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	
<b>Dose</b> (mg/kg wet/day)	<b>Soil</b>	0.001	0.174	0.561	0.007	0.001	1.461	0.159	0.187	0.142	4.906	0.000	
	<b>Water</b>	0.0000	0.0000	0.0004	0.0000	0.0000	0.0001	0.0000	0.0001	0.0000	0.0003	0.0000	
	Sedges	25%	0.000	0.012	2.241	0.001	0.003	0.208	0.024	0.177	0.020	27.013	0.001
	Lichens	0%	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Berries	5%	0.0000	0.0001	0.0307	0.0000	0.0002	0.0016	0.0002	0.0179	0.0001	0.2961	0.0000
	Insects	70%	0.011	0.113	4.976	0.058	0.046	12.947	1.412	2.192	0.132	43.484	0.002
	<b>Total Food</b>	100%	0.0112	0.1258	7.2468	0.0591	0.0494	13.1570	1.4370	2.3866	0.1517	70.7934	0.0033
	<b>Total Dose</b>		0.012	0.300	7.809	0.066	0.051	14.618	1.596	2.573	0.294	75.699	0.004
<b>Relative Contribution</b> (% of total dose)	<b>Soil</b>	10%	58%	7%	10%	3%	10%	10%	7%	48%	6%	7%	
	<b>Water</b>	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Sedges	2%	4%	29%	2%	7%	1%	2%	7%	7%	36%	35%	
	Lichens	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Berries	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	
	Insects	88%	38%	64%	88%	91%	89%	88%	85%	45%	57%	58%	
	<b>Total Food</b>	90%	42%	93%	90%	97%	90%	90%	93%	52%	94%	93%	
<b>TRVs</b> (mg/kg wet/day)	<b>NOEL<sub>TRV</sub></b>	9.8	2.5	21.0	0.1	1.5	1.0	2.4	47.0	1.1	977.0	na	
	<b>LOAEL<sub>TRV</sub></b>	11.3	7.4	42.0	na	20.0	5.0	4.7	61.7	11.3	na	na	
<b>Hazard Quotients</b> (unitless)	<b>HQ (NOAEL)</b>	0.0	0.1	0.4	1.0	0.0	14.6	0.7	0.1	0.3	0.1	na	
	<b>HQ (LOAEL)</b>	0.0	0.0	0.2	na	0.0	2.9	0.3	0.0	0.0	na	na	

**Notes:**

na - not available

**Dietary exposure and HQ calculations for Lapland longspur  
Near-site - 2017  
(table based on Azimuth, 2006)**

Risk Assessment		Dietary											
Parameter	Preference	Inorg-Hg	MeHg	Molybdenum	Nickel	Selenium	Strontium	Thallium	Tin	Uranium	Vanadium	Zinc	
<b>% Time</b> (unitless)		33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	
<b>Dose</b> (mg/kg wet/day)	<b>Soil</b>	0.000	0.000	0.013	0.752	0.002	0.380	0.002	0.017	0.042	0.399	0.683	
	<b>Water</b>	0.0000	0.0000	0.0000	0.0001	0.0000	0.0018	0.0000	0.0000	0.0000	0.0001	0.0003	
	Sedges	25%	0.001	0.000	0.088	0.389	0.002	0.768	0.001	0.002	0.003	0.026	2.586
	Lichens	0%	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
	Berries	5%	0.0000	0.0000	0.0080	0.0002	0.0109	0.0000	0.0013	0.0000	0.0003	0.0302	0.0417
	Insects	70%	0.002	0.000	0.117	6.664	0.015	3.369	0.018	0.154	0.370	3.535	27.597
	<b>Total Food</b>	100%	0.0029	0.0005	0.2126	7.0527	0.0284	4.1367	0.0199	0.1559	0.3738	3.5907	30.2250
	<b>Total Dose</b>		0.003	0.000	0.226	7.805	0.030	4.519	0.022	0.173	0.416	3.990	30.908
<b>Relative Contribution</b> (% of total dose)	<b>Soil</b>	7%	1%	6%	10%	6%	8%	9%	10%	10%	10%	2%	
	<b>Water</b>	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Sedges	27%	94%	39%	5%	7%	17%	2%	1%	1%	1%	8%	
	Lichens	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Berries	0%	1%	4%	0%	36%	0%	6%	0%	0%	1%	0%	
	Insects	66%	5%	52%	85%	51%	75%	83%	89%	89%	89%	89%	
	<b>Total Food</b>	93%	99%	94%	90%	94%	92%	91%	90%	90%	90%	98%	
<b>TRVs</b> (mg/kg wet/day)	<b>NOEL<sub>TRV</sub></b>	0.5	0.0	3.5	77.4	0.4	26.3	0.2	6.8	16.0	11.4	14.5	
	<b>LOAEL<sub>TRV</sub></b>	0.9	0.1	35.3	107.0	0.8	na	0.8	16.9	na	na	130.9	
<b>Hazard Quotients</b> (unitless)	<b>HQ (NOAEL)</b>	0.0	0.1	0.1	0.1	0.1	0.2	0.1	0.0	0.0	0.3	2.1	
	<b>HQ (LOAEL)</b>	0.0	0.0	0.0	0.1	0.0	na	0.0	0.0	na	na	0.2	

**Notes:**

na - not available

**Dietary exposure and HQ calculations for Lapland longspur**  
**AWAR - 2017**  
(table based on Azimuth, 2006)

Risk Assessment		Dietary											
Parameter	Preference	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Manganese	Total Hg	
<b>% Time</b> (unitless)		33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	
<b>Dose</b> (mg/kg wet/day)	<b>Soil</b>	0.001	0.148	0.554	0.006	0.001	1.384	0.159	0.193	0.127	4.586	0.000	
	<b>Water</b>	0.0000	0.0000	0.0006	0.0000	0.0000	0.0001	0.0000	0.0001	0.0000	0.0003	0.0000	
	Sedges	25%	0.001	0.030	2.998	0.001	0.005	0.510	0.064	0.290	0.019	37.875	0.001
	Lichens	0%	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Berries	5%	0.0000	0.0002	0.0322	0.0000	0.0003	0.0020	0.0003	0.0179	0.0001	0.5078	0.0000
	Insects	70%	0.011	0.096	4.909	0.051	0.042	12.269	1.411	2.218	0.121	40.655	0.001
	<b>Total Food</b>	100%	0.0115	0.1269	7.9387	0.0522	0.0469	12.7816	1.4744	2.5265	0.1403	79.0381	0.0024
	<b>Total Dose</b>		0.013	0.275	8.493	0.058	0.048	14.166	1.634	2.720	0.267	83.625	0.002
<b>Relative Contribution</b> (% of total dose)	<b>Soil</b>	10%	54%	7%	10%	2%	10%	10%	7%	47%	5%	5%	
	<b>Water</b>	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Sedges	4%	11%	35%	3%	10%	4%	4%	11%	7%	45%	53%	
	Lichens	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Berries	0%	0%	0%	0%	1%	0%	0%	1%	0%	1%	1%	
	Insects	86%	35%	58%	88%	87%	87%	86%	82%	45%	49%	42%	
	<b>Total Food</b>	90%	46%	93%	90%	98%	90%	90%	93%	52%	95%	95%	
<b>TRVs</b> (mg/kg wet/day)	<b>NOEL<sub>TRV</sub></b>	9.8	2.5	21.0	0.1	1.5	1.0	2.4	47.0	1.1	977.0	na	
	<b>LOAEL<sub>TRV</sub></b>	11.3	7.4	42.0	na	20.0	5.0	4.7	61.7	11.3	na	na	
<b>Hazard Quotients</b> (unitless)	<b>HQ (NOAEL)</b>	0.0	0.1	0.4	0.9	0.0	14.2	0.7	0.1	0.2	0.1	na	
	<b>HQ (LOAEL)</b>	0.0	0.0	0.2	na	0.0	2.8	0.3	0.0	0.0	na	na	

**Notes:**

na - not available

**Dietary exposure and HQ calculations for Lapland longspur**  
**AWAR - 2017**  
(table based on Azimuth, 2006)

Risk Assessment		Dietary											
Parameter	Preference	Inorg-Hg	MeHg	Molybdenum	Nickel	Selenium	Strontium	Thallium	Tin	Uranium	Vanadium	Zinc	
<b>% Time</b> (unitless)		33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	
<b>Dose</b> (mg/kg wet/day)	<b>Soil</b>	0.000	0.000	0.012	0.728	0.002	0.433	0.002	0.017	0.036	0.402	0.638	
	<b>Water</b>	0.0000	0.0000	0.0000	0.0001	0.0000	0.0030	0.0000	0.0000	0.0000	0.0001	0.0003	
	Sedges	25%	0.001	0.000	0.142	0.543	0.002	1.254	0.000	0.002	0.006	0.106	3.161
	Lichens	0%	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
	Berries	5%	0.0000	0.0000	0.0097	0.0002	0.0118	0.0000	0.0011	0.0000	0.0005	0.0436	0.0556
	Insects	70%	0.001	0.000	0.102	6.451	0.015	3.841	0.016	0.154	0.320	3.565	27.105
	<b>Total Food</b>	100%	0.0019	0.0005	0.2541	6.9937	0.0296	5.0946	0.0178	0.1564	0.3263	3.7140	30.3217
	<b>Total Dose</b>		0.002	0.000	0.266	7.721	0.031	5.531	0.020	0.174	0.362	4.116	30.960
<b>Relative Contribution</b> (% of total dose)	<b>Soil</b>	6%	0%	4%	9%	6%	8%	9%	10%	10%	10%	2%	
	<b>Water</b>	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Sedges	43%	96%	54%	7%	8%	23%	2%	1%	2%	3%	10%	
	Lichens	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Berries	1%	1%	4%	0%	38%	0%	6%	0%	0%	1%	0%	
	Insects	51%	2%	38%	84%	49%	69%	83%	89%	88%	87%	88%	
	<b>Total Food</b>	94%	100%	96%	91%	94%	92%	91%	90%	90%	90%	98%	
<b>TRVs</b> (mg/kg wet/day)	<b>NOEL<sub>TRV</sub></b>	0.5	0.0	3.5	77.4	0.4	26.3	0.2	6.8	16.0	11.4	14.5	
	<b>LOEL<sub>TRV</sub></b>	0.9	0.1	35.3	107.0	0.8	na	0.8	16.9	na	na	130.9	
<b>Hazard Quotients</b> (unitless)	<b>HQ (NOAEL)</b>	0.0	0.1	0.1	0.1	0.1	0.2	0.1	0.0	0.0	0.4	2.1	
	<b>HQ (LOAEL)</b>	0.0	0.0	0.0	0.1	0.0	na	0.0	0.0	na	na	0.2	

**Notes:**

na - not available



**Dietary exposure and HQ calculations for Lapland longspur**  
**External Reference - 2017**  
 (table based on Azimuth, 2006)

Risk Assessment		Dietary											
Parameter	Preference	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Manganese	Total Hg	
<b>% Time</b> (unitless)		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
<b>Dose</b> (mg/kg wet/day)	<b>Soil</b>	0.001	0.199	0.522	0.006	0.001	1.753	0.183	0.203	0.142	4.992	0.00015	
	<b>Water</b>	0.0000	0.0000	0.000	0.0000	0.0000	0.0001	0.0000	0.0001	0.0000	0.0003	0.00000	
	Sedges	25%	0.000	0.007	2.098	0.001	0.004	0.107	0.021	0.175	0.013	28.346	0.001
	Lichens	0%	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Berries	5%	0.0000	0.0001	0.0254	0.0000	0.0001	0.0012	0.0002	0.0163	0.0001	0.2047	0.0000
	Insects	70%	0.012	0.129	4.628	0.053	0.047	15.536	1.622	2.255	0.132	44.251	0.001
	<b>Total Food</b>	100%	0.0127	0.1352	6.7514	0.0541	0.0508	15.6445	1.6438	2.4464	0.1451	72.8016	0.0027
	<b>Total Dose</b>		0.014	0.335	7.274	0.060	0.052	17.397	1.827	2.650	0.287	77.794	0.003
<b>Relative Contribution</b> (% of total dose)	<b>Soil</b>	10%	60%	7%	10%	3%	10%	10%	8%	50%	6%	5%	
	<b>Water</b>	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Sedges	1%	2%	29%	1%	7%	1%	1%	7%	5%	36%	46%	
	Lichens	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Berries	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	1%	
	Insects	88%	38%	64%	89%	90%	89%	89%	85%	46%	57%	48%	
	<b>Total Food</b>	90%	40%	93%	90%	97%	90%	90%	92%	50%	94%	95%	
<b>TRVs</b> (mg/kg wet/day)	<b>NOEL<sub>TRV</sub></b>	9.8	2.5	21.0	0.1	1.5	1.0	2.4	47.0	1.1	977.0	na	
	<b>LOAEL<sub>TRV</sub></b>	11.3	7.4	42.0	na	20.0	5.0	4.7	61.7	11.3	na	na	
<b>Hazard Quotients</b> (unitless)	<b>HQ (NOAEL)</b>	0.0	0.1	0.3	0.9	0.0	17.4	0.8	0.1	0.3	0.1	na	
	<b>HQ (LOAEL)</b>	0.0	0.0	0.2	na	0.0	3.5	0.4	0.0	0.0	na	na	

**Notes:**

na - not available

**Dietary exposure and HQ calculations for Lapland longspur**  
**External Reference - 2017**  
 (table based on Azimuth, 2006)

Risk Assessment		Dietary											
Parameter	Preference	Inorg-Hg	MeHg	Molybdenum	Nickel	Selenium	Strontium	Thallium	Tin	Uranium	Vanadium	Zinc	
<b>% Time</b> (unitless)		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
<b>Dose</b> (mg/kg wet/day)	<b>Soil</b>	0.00015	0.000002	0.012	0.936	0.002	0.460	0.002	0.017	0.033	0.435	0.726	
	<b>Water</b>	0.00000	0.0000	0.0000	0.0001	0.0000	0.0017	0.000	0.000	0.000	0.000	0.000	
	Sedges	25%	0.001	0.000	0.088	0.433	0.002	0.741	0.000	0.002	0.001	0.015	2.929
	Lichens	0%	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Berries	5%	0.0000	0.0000	0.0089	0.0002	0.0101	0.0000	0.0011	0.0000	0.0003	0.0247	0.0416
	Insects	70%	0.001	0.000	0.104	8.293	0.015	4.081	0.016	0.154	0.291	3.853	27.987
	<b>Total Food</b>	100%	0.0022	0.0005	0.2007	8.7263	0.0277	4.8219	0.0179	0.1559	0.2922	3.8923	30.9571
	<b>Total Dose</b>		0.002	0.000	0.212	9.662	0.029	5.284	0.020	0.173	0.325	4.327	31.683
<b>Relative Contribution</b> (% of total dose)	<b>Soil</b>	6%	0%	6%	10%	6%	9%	9%	10%	10%	10%	2%	
	<b>Water</b>	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Sedges	37%	96%	41%	4%	7%	14%	2%	1%	0%	0%	9%	
	Lichens	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Berries	0%	1%	4%	0%	34%	0%	6%	0%	0%	1%	0%	
	Insects	57%	3%	49%	86%	52%	77%	83%	89%	90%	89%	88%	
	<b>Total Food</b>	94%	100%	94%	90%	94%	91%	91%	90%	90%	90%	98%	
<b>TRVs</b> (mg/kg wet/day)	<b>NOEL<sub>TRV</sub></b>	0.5	0.0	3.5	77.4	0.4	26.3	0.2	6.8	16.0	11.4	14.5	
	<b>LOAEL<sub>TRV</sub></b>	0.9	0.1	35.3	107.0	0.8	na	0.8	16.9	na	na	130.9	
<b>Hazard Quotients</b> (unitless)	<b>HQ (NOAEL)</b>	0.0	0.1	0.1	0.1	0.1	0.2	0.1	0.0	0.0	0.4	2.2	
	<b>HQ (LOAEL)</b>	0.0	0.0	0.0	0.1	0.0	na	0.0	0.0	na	na	0.2	

**Notes:**

na - not available

**Dietary exposure and HQ calculations for Canada goose**  
**Onsite - 2017**  
(table based on Azimuth, 2006)

Risk Assessment		Dietary											
Parameter	Preference	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Manganese	Total Hg	
<b>% Time</b> (unitless)		33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	
<b>Dose</b> (mg/kg wet/day)	<b>Soil</b>	0.000	0.012	0.032	0.000	0.000	0.082	0.010	0.012	0.009	0.290	0.000	
	<b>Water</b>	0.00000	0.00001	0.00010	0.00000	0.00000	0.00002	0.00000	0.00002	0.00000	0.00008	0.00000	
	Sedges	50%	0.0000	0.0025	0.2286	0.0001	0.0004	0.0345	0.0034	0.0222	0.0032	2.9642	0.0001
	Lichens	0%	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Berries	45%	0.0000	0.0001	0.0120	0.0000	0.0001	0.0010	0.0001	0.0083	0.0001	0.1065	0.0000
	Insects	5%	0.000	0.000	0.019	0.000	0.000	0.048	0.006	0.008	0.001	0.171	0.000
	<b>Total Food</b>	100%	0.0001	0.0031	0.2592	0.0003	0.0006	0.0838	0.0092	0.0388	0.0038	3.2412	0.0001
<b>Total Dose</b>		0.000	0.015	0.291	0.001	0.001	0.166	0.019	0.051	0.012	3.532	0.0002	
<b>Relative Contribution</b> (% of total dose)	<b>Soil</b>	46%	79%	11%	53%	11%	50%	51%	23%	69%	8%	7%	
	<b>Water</b>	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Sedges	18%	17%	79%	14%	58%	21%	18%	44%	26%	84%	85%	
	Lichens	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Berries	8%	1%	4%	2%	8%	1%	16%	0%	3%	5%	5%	
	Insects	27%	3%	6%	31%	24%	29%	30%	16%	4%	5%	4%	
	<b>Total Food</b>	53%	21%	89%	47%	89%	50%	49%	77%	31%	92%	93%	
<b>TRVs</b> (mg/kg wet/day)	<b>NOEL<sub>TRV</sub></b>	9.8	2.5	21.0	0.1	1.5	1.0	2.4	47.0	1.1	977.0	na	
	<b>LOEL<sub>TRV</sub></b>	11.3	7.4	42.0	na	20.0	5.0	4.7	61.7	11.3	na	na	
<b>Hazard Quotients</b> (unitless)	<b>HQ (NOEL)</b>	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	na	
	<b>HQ (LOEL)</b>	0.0	0.0	0.0	na	0.0	0.0	0.0	0.0	0.0	na	na	

**Notes:**  
na - not available

**Dietary exposure and HQ calculations for Canada goose**  
**Onsite - 2017**  
(table based on Azimuth, 2006)

Risk Assessment		Dietary										
Parameter	Preference	Inorg-Hg	MeHg	Molybdenum	Nickel	Selenium	Strontium	Thallium	Tin	Uranium	Vanadium	Zinc
<b>% Time</b> (unitless)		33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%
<b>Dose</b> (mg/kg wet/day)												
	<b>Soil</b>	0.000	0.000	0.001	0.044	0.000	0.021	0.000	0.001	0.002	0.023	0.039
	<b>Water</b>	0.00000	0.00000	0.00001	0.00002	0.00000	0.00046	0.00000	0.00000	0.00000	0.00001	0.00008
	Sedges	50%	0.0001	0.0000	0.0098	0.0459	0.0002	0.0857	0.0001	0.0002	0.0003	0.0047
	Lichens	0%	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Berries	45%	0.0000	0.0000	0.0037	0.0001	0.0047	0.0000	0.0006	0.0000	0.0002	0.0129
	Insects	5%	0.000	0.000	0.000	0.026	0.000	0.012	0.000	0.001	0.013	0.101
	<b>Total Food</b>	100%	0.0001	0.0000	0.0139	0.0718	0.0050	0.0980	0.0007	0.0007	0.0017	0.0309
	<b>Total Dose</b>		0.0001	0.0000	0.015	0.116	0.005	0.119	0.001	0.002	0.004	0.054
<b>Relative Contribution</b> (% of total dose)												
	<b>Soil</b>	10%	0%	5%	38%	2%	18%	14%	56%	55%	42%	9%
	<b>Water</b>	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Sedges	80%	94%	67%	40%	4%	72%	6%	11%	8%	9%	63%
	Lichens	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Berries	4%	5%	25%	0%	93%	0%	71%	1%	5%	24%	5%
	Insects	6%	0%	3%	22%	1%	10%	8%	33%	32%	25%	23%
	<b>Total Food</b>	90%	100%	95%	62%	98%	82%	86%	44%	45%	58%	91%
<b>TRVs</b> (mg/kg wet/day)												
	<b>NOEL<sub>TRV</sub></b>	0.5	0.0	3.5	77.4	0.4	26.3	0.2	6.8	16.0	11.4	14.5
	<b>LOAEL<sub>TRV</sub></b>	0.9	0.1	35.3	107.0	0.8	na	0.8	16.9	na	na	130.9
<b>Hazard Quotients</b> (unitless)												
	<b>HQ (NOAEL)</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>HQ (LOAEL)</b>	0.0	0.0	0.0	0.0	0.0	na	0.0	0.0	na	na	0.0

**Notes:**  
na - not available

**Dietary exposure and HQ calculations for Canada goose**  
**Near-site - 2017**  
(table based on Azimuth, 2006)

Risk Assessment		Dietary										
Parameter	Preference	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Manganese	Total Hg
<b>% Time</b> (unitless)		33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%
<b>Dose</b> (mg/kg wet/day)												
	<b>Soil</b>	0.000	0.010	0.031	0.000	0.000	0.080	0.009	0.010	0.008	0.269	0.000
	<b>Water</b>	0.00000	0.00001	0.00009	0.00000	0.00000	0.00002	0.00000	0.00001	0.00000	0.00007	0.00000
	Sedges	50%	0.0000	0.0013	0.2277	0.0001	0.0003	0.0211	0.0025	0.0180	0.0020	2.7451
	Lichens	0%	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Berries	45%	0.0000	0.0001	0.0140	0.0000	0.0001	0.0007	0.0001	0.0082	0.0000	0.1354
	Insects	5%	0.000	0.000	0.018	0.000	0.000	0.047	0.005	0.008	0.000	0.158
	<b>Total Food</b>	100%	0.0001	0.0017	0.2598	0.0003	0.0006	0.0689	0.0077	0.0341	0.0026	3.0383
	<b>Total Dose</b>		0.000	0.011	0.291	0.001	0.001	0.149	0.016	0.044	0.010	3.307
<b>Relative Contribution</b> (% of total dose)												
	<b>Soil</b>	45%	85%	11%	51%	11%	54%	53%	23%	75%	8%	8%
	<b>Water</b>	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Sedges	17%	11%	78%	16%	51%	14%	15%	41%	20%	83%	82%
	Lichens	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Berries	11%	1%	5%	2%	13%	0%	1%	18%	0%	4%	5%
	Insects	26%	4%	6%	30%	25%	32%	31%	18%	5%	5%	5%
	<b>Total Food</b>	54%	15%	89%	49%	89%	46%	47%	77%	25%	92%	92%
<b>TRVs</b> (mg/kg wet/day)												
	<b>NOEL<sub>TRV</sub></b>	9.8	2.5	21.0	0.1	1.5	1.0	2.4	47.0	1.1	977.0	na
	<b>LOAEL<sub>TRV</sub></b>	11.3	7.4	42.0	na	20.0	5.0	4.7	61.7	11.3	na	na
<b>Hazard Quotients</b> (unitless)												
	<b>HQ (NOAEL)</b>	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	na
	<b>HQ (LOAEL)</b>	0.0	0.0	0.0	na	0.0	0.0	0.0	0.0	0.0	na	na

**Notes:**  
na - not available

**Dietary exposure and HQ calculations for Canada goose**  
**Near-site - 2017**  
(table based on Azimuth, 2006)

Risk Assessment		Dietary										
Parameter	Preference	Inorg-Hg	MeHg	Molybdenum	Nickel	Selenium	Strontium	Thallium	Tin	Uranium	Vanadium	Zinc
<b>% Time</b> (unitless)		33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%
<b>Dose</b> (mg/kg wet/day)												
	<b>Soil</b>	0.000	0.000	0.001	0.041	0.000	0.021	0.000	0.001	0.002	0.022	0.037
	<b>Water</b>	0.00000	0.00000	0.00000	0.00002	0.00000	0.00038	0.00000	0.00000	0.00000	0.00001	0.00007
	Sedges	50%	0.0001	0.0000	0.0089	0.0395	0.0002	0.0780	0.0001	0.0002	0.0003	0.0262
	Lichens	0%	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Berries	45%	0.0000	0.0000	0.0036	0.0001	0.0050	0.0000	0.0006	0.0000	0.0138	0.0191
	Insects	5%	0.000	0.000	0.000	0.024	0.000	0.012	0.000	0.001	0.013	0.100
	<b>Total Food</b>	100%	0.0001	0.0000	0.0130	0.0638	0.0053	0.0903	0.0007	0.0007	0.0018	0.3820
	<b>Total Dose</b>		0.0001	0.0000	0.014	0.105	0.005	0.111	0.001	0.002	0.004	0.420
<b>Relative Contribution</b> (% of total dose)												
	<b>Soil</b>	12%	0%	5%	39%	2%	19%	14%	57%	56%	43%	9%
	<b>Water</b>	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Sedges	77%	94%	65%	38%	4%	70%	6%	10%	8%	5%	63%
	Lichens	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Berries	4%	5%	27%	0%	93%	0%	72%	0%	4%	27%	5%
	Insects	7%	0%	3%	23%	1%	11%	8%	33%	33%	25%	24%
	<b>Total Food</b>	88%	100%	95%	61%	98%	81%	86%	43%	44%	57%	91%
<b>TRVs</b> (mg/kg wet/day)												
	<b>NOEL<sub>TRV</sub></b>	0.5	0.0	3.5	77.4	0.4	26.3	0.2	6.8	16.0	11.4	14.5
	<b>LOAEL<sub>TRV</sub></b>	0.9	0.1	35.3	107.0	0.8	na	0.8	16.9	na	na	130.9
<b>Hazard Quotients</b> (unitless)												
	<b>HQ (NOAEL)</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>HQ (LOAEL)</b>	0.0	0.0	0.0	0.0	0.0	na	0.0	0.0	na	na	0.0

**Notes:**  
na - not available

**Dietary exposure and HQ calculations for Canada goose**  
**AWAR - 2017**  
(table based on Azimuth, 2006)

Risk Assessment		Dietary										
Parameter	Preference	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Manganese	Total Hg
<b>% Time</b> (unitless)		33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%
<b>Dose</b> (mg/kg wet/day)												
	<b>Soil</b>	0.000	0.008	0.030	0.000	0.000	0.076	0.009	0.011	0.007	0.251	0.000
	<b>Water</b>	0.00000	0.00001	0.00012	0.00000	0.00000	0.00002	0.00000	0.00003	0.00000	0.00006	0.00000
	Sedges	50%	0.0001	0.0031	0.3047	0.0001	0.0005	0.0518	0.0065	0.0295	0.0019	3.8489
	Lichens	0%	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Berries	45%	0.0000	0.0001	0.0147	0.0000	0.0001	0.0009	0.0001	0.0082	0.0001	0.2322
	Insects	5%	0.000	0.000	0.018	0.000	0.000	0.045	0.005	0.008	0.000	0.148
	<b>Total Food</b>	100%	0.0001	0.0035	0.3372	0.0003	0.0008	0.0973	0.0117	0.0457	0.0024	4.2287
	<b>Total Dose</b>		0.000	0.012	0.368	0.001	0.001	0.173	0.020	0.056	0.009	4.480
<b>Relative Contribution</b> (% of total dose)												
	<b>Soil</b>	38%	70%	8%	47%	7%	44%	43%	19%	74%	6%	4%
	<b>Water</b>	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Sedges	30%	27%	83%	23%	59%	30%	32%	52%	21%	86%	89%
	Lichens	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Berries	8%	1%	4%	2%	16%	1%	1%	15%	1%	5%	5%
	Insects	23%	3%	5%	28%	17%	26%	25%	14%	5%	3%	2%
	<b>Total Food</b>	60%	30%	92%	53%	93%	56%	57%	81%	26%	94%	96%
<b>TRVs</b> (mg/kg wet/day)												
	<b>NOEL<sub>TRV</sub></b>	9.8	2.5	21.0	0.1	1.5	1.0	2.4	47.0	1.1	977.0	na
	<b>LOAEL<sub>TRV</sub></b>	11.3	7.4	42.0	na	20.0	5.0	4.7	61.7	11.3	na	na
<b>Hazard Quotients</b> (unitless)												
	<b>HQ (NOAEL)</b>	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	na
	<b>HQ (LOAEL)</b>	0.0	0.0	0.0	na	0.0	0.0	0.0	0.0	0.0	na	na

**Notes:**  
na - not available

**Dietary exposure and HQ calculations for Canada goose**  
**AWAR - 2017**  
(table based on Azimuth, 2006)

Risk Assessment		Dietary										
Parameter	Preference	Inorg-Hg	MeHg	Molybdenum	Nickel	Selenium	Strontium	Thallium	Tin	Uranium	Vanadium	Zinc
<b>% Time</b> (unitless)		33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%
<b>Dose</b> (mg/kg wet/day)												
	<b>Soil</b>	0.000	0.000	0.001	0.040	0.000	0.024	0.000	0.001	0.002	0.022	0.035
	<b>Water</b>	0.00000	0.00000	0.00001	0.00002	0.00000	0.00065	0.00000	0.00000	0.00000	0.00001	0.00007
	Sedges	50%	0.0001	0.0000	0.0145	0.0552	0.0002	0.1274	0.0000	0.0002	0.0006	0.0107
	Lichens	0%	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Berries	45%	0.0000	0.0000	0.0045	0.0001	0.0054	0.0000	0.0005	0.0000	0.0002	0.0199
	Insects	5%	0.000	0.000	0.000	0.023	0.000	0.014	0.000	0.001	0.013	0.098
	<b>Total Food</b>	100%	0.0001	0.0000	0.0193	0.0787	0.0057	0.1414	0.0006	0.0008	0.0436	0.4450
	<b>Total Dose</b>		0.0001	0.0000	0.020	0.119	0.006	0.166	0.001	0.002	0.066	0.480
<b>Relative Contribution</b> (% of total dose)												
	<b>Soil</b>	6%	0%	3%	34%	2%	14%	14%	55%	50%	34%	7%
	<b>Water</b>	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Sedges	86%	95%	73%	47%	4%	77%	7%	12%	14%	16%	67%
	Lichens	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Berries	5%	5%	22%	0%	93%	0%	71%	1%	6%	30%	5%
	Insects	4%	0%	2%	20%	1%	8%	8%	32%	30%	20%	20%
	<b>Total Food</b>	94%	100%	97%	66%	98%	85%	86%	45%	49%	66%	93%
<b>TRVs</b> (mg/kg wet/day)												
	<b>NOEL<sub>TRV</sub></b>	0.5	0.0	3.5	77.4	0.4	26.3	0.2	6.8	16.0	11.4	14.5
	<b>LOAEL<sub>TRV</sub></b>	0.9	0.1	35.3	107.0	0.8	na	0.8	16.9	na	na	130.9
<b>Hazard Quotients</b> (unitless)												
	<b>HQ (NOAEL)</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	<b>HQ (LOAEL)</b>	0.0	0.0	0.0	0.0	0.0	na	0.0	0.0	na	na	0.0

**Notes:**  
na - not available



**Dietary exposure and HQ calculations for Canada goose**  
**External Reference - 2017**  
 (table based on Azimuth, 2006)

Risk Assessment		Dietary											
Parameter	Preference	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Manganese	Total Hg	
<b>% Time</b> (unitless)		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
<b>Dose</b> (mg/kg wet/day)	<b>Soil</b>	0.000	0.011	0.029	0.000	0.000	0.096	0.010	0.011	0.008	0.273	0.000	
	<b>Water</b>	0.00000	0.00001	0.00008	0.00000	0.00000	0.00003	0.00000	0.00001	0.00000	0.00007	0.00000	
	Sedges	50%	0.0000	0.0007	0.2132	0.0001	0.0004	0.0109	0.0022	0.0178	0.0014	2.8805	0.0001
	Lichens	0%	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Berries	45%	0.0000	0.0000	0.0116	0.0000	0.0001	0.0005	0.0001	0.0075	0.0000	0.0936	0.0000
	Insects	5%	0.000	0.000	0.017	0.000	0.000	0.056	0.006	0.008	0.000	0.161	0.000
	<b>Total Food</b>	100%	0.0001	0.0012	0.2417	0.0003	0.0006	0.0678	0.0081	0.0334	0.0019	3.1347	0.0001
<b>Total Dose</b>		0.000	0.012	0.270	0.001	0.001	0.164	0.018	0.045	0.010	3.408	0.0002	
<b>Relative Contribution</b> (% of total dose)	<b>Soil</b>	49%	90%	11%	55%	11%	59%	55%	25%	81%	8%	5%	
	<b>Water</b>	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Sedges	12%	5%	79%	10%	55%	7%	12%	40%	14%	85%	87%	
	Lichens	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Berries	9%	0%	4%	2%	8%	0%	0%	17%	0%	3%	5%	
	Insects	29%	4%	6%	32%	25%	34%	32%	18%	5%	5%	3%	
	<b>Total Food</b>	50%	10%	89%	45%	89%	41%	45%	75%	19%	92%	94%	
<b>TRVs</b> (mg/kg wet/day)	<b>NOEL<sub>TRV</sub></b>	9.8	2.5	21.0	0.1	1.5	1.0	2.4	47.0	1.1	977.0	na	
	<b>LOAEL<sub>TRV</sub></b>	11.3	7.4	42.0	na	20.0	5.0	4.7	61.7	11.3	na	na	
<b>Hazard Quotients</b> (unitless)	<b>HQ (NOAEL)</b>	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	na	
	<b>HQ (LOAEL)</b>	0.0	0.0	0.0	na	0.0	0.0	0.0	0.0	0.0	na	na	

**Notes:**

na - not available

**Dietary exposure and HQ calculations for Canada goose**  
**External Reference - 2017**  
 (table based on Azimuth, 2006)

Risk Assessment		Dietary											
Parameter	Preference	Inorg-Hg	MeHg	Molybdenum	Nickel	Selenium	Strontium	Thallium	Tin	Uranium	Vanadium	Zinc	
<b>% Time</b> (unitless)		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
<b>Dose</b> (mg/kg wet/day)	<b>Soil</b>	0.000	0.000	0.001	0.051	0.000	0.025	0.000	0.001	0.002	0.024	0.040	
	<b>Water</b>	0.00000	0.00000	0.00000	0.00002	0.00000	0.00037	0.00000	0.00000	0.00000	0.00001	0.00008	
	Sedges	50%	0.0001	0.0000	0.0089	0.0440	0.0002	0.0753	0.0000	0.0002	0.0001	0.0015	0.2976
	Lichens	0%	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
	Berries	45%	0.0000	0.0000	0.0041	0.0001	0.0046	0.0000	0.0005	0.0000	0.0001	0.0113	0.0190
	Insects	5%	0.000	0.000	0.000	0.030	0.000	0.015	0.000	0.001	0.001	0.014	0.102
	<b>Total Food</b>	100%	0.0001	0.0000	0.0133	0.0742	0.0049	0.0901	0.0006	0.0007	0.0013	0.0268	0.4182
	<b>Total Dose</b>		0.0001	0.0000	0.014	0.125	0.005	0.116	0.001	0.002	0.003	0.051	0.458
<b>Relative Contribution</b> (% of total dose)	<b>Soil</b>	8%	0%	5%	41%	2%	22%	14%	57%	58%	47%	9%	
	<b>Water</b>	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Sedges	83%	95%	64%	35%	4%	65%	7%	10%	3%	3%	65%	
	Lichens	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Berries	4%	5%	29%	0%	93%	0%	71%	0%	5%	22%	4%	
	Insects	5%	0%	3%	24%	1%	13%	8%	33%	34%	28%	22%	
	<b>Total Food</b>	92%	100%	95%	59%	98%	78%	86%	43%	42%	53%	91%	
<b>TRVs</b> (mg/kg wet/day)	<b>NOEL<sub>TRV</sub></b>	0.5	0.0	3.5	77.4	0.4	26.3	0.2	6.8	16.0	11.4	14.5	
	<b>LOAEL<sub>TRV</sub></b>	0.9	0.1	35.3	107.0	0.8	na	0.8	16.9	na	na	130.9	
<b>Hazard Quotients</b> (unitless)	<b>HQ (NOAEL)</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	<b>HQ (LOAEL)</b>	0.0	0.0	0.0	0.0	0.0	na	0.0	0.0	na	na	0.0	

**Notes:**  
 na - not available

## Appendix C - References

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## Appendix D

### Laboratory Certificates of Analysis – Soil and Plant Tissue Samples<sup>1</sup>

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<sup>1</sup> For water samples see Core Receiving Environment Monitoring Program Report, 2014



AGNICO-EAGLE MINES LTD.  
ATTN: Leilan Baxter  
Meadowbank Division  
Baker Lae Nunavut XOC OAO

Date Received: 08-SEP-17  
Report Date: 06-NOV-17 19:51 (MT)  
Version: FINAL

Client Phone: 819-759-3555

## Certificate of Analysis

Lab Work Order #: L1988451  
Project P.O. #: NOT SUBMITTED  
Job Reference: MEADOWBANK SLRA  
C of C Numbers:  
Legal Site Desc:

Shane Stack  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 8081 Lougheed Hwy, Suite 100, Burnaby, BC V5A 1W9 Canada | Phone: +1 604 253 4188 | Fax: +1 604 253 6700  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1988451-1	L1988451-5	L1988451-9	L1988451-13	L1988451-17
		Description	Soil	Soil	Soil	Soil	Soil
		Sampled Date	15-AUG-17	15-AUG-17	15-AUG-17	15-AUG-17	15-AUG-17
		Sampled Time	16:30	16:30	16:30	16:30	16:30
		Client ID	T1-1-SOIL	T1-2-SOIL	T1-3-SOIL	T1-4-SOIL	T1-5-SOIL
Grouping	Analyte						
<b>SOIL</b>							
<b>Physical Tests</b>	pH (1:2 soil:water) (pH)		6.11	6.00	5.66	6.41	6.64
<b>Metals</b>	Aluminum (Al) (mg/kg)		11700	9730	13200	13100	8100
	Antimony (Sb) (mg/kg)		<0.10	<0.10	<0.10	0.10	<0.10
	Arsenic (As) (mg/kg)		4.16	3.78	5.14	5.76	3.13
	Barium (Ba) (mg/kg)		34.6	32.3	38.5	44.5	22.9
	Beryllium (Be) (mg/kg)		0.56	0.54	0.66	0.73	0.38
	Bismuth (Bi) (mg/kg)		0.57	0.65	0.73	0.76	0.39
	Boron (B) (mg/kg)		<5.0	<5.0	<5.0	<5.0	<5.0
	Cadmium (Cd) (mg/kg)		0.028	0.040	0.040	0.037	0.040
	Calcium (Ca) (mg/kg)		2110	2080	1420	2050	1840
	Chromium (Cr) (mg/kg)		33.9	34.9	44.8	46.9	28.7
	Cobalt (Co) (mg/kg)		8.53	7.14	8.44	8.99	5.22
	Copper (Cu) (mg/kg)		10.1	9.29	11.0	15.0	6.68
	Iron (Fe) (mg/kg)		35300	24400	34900	40000	21800
	Lead (Pb) (mg/kg)		7.12	6.93	8.72	8.54	7.07
	Lithium (Li) (mg/kg)		21.1	20.3	25.3	26.8	16.1
	Magnesium (Mg) (mg/kg)		6700	6150	7020	7530	4690
	Manganese (Mn) (mg/kg)		337	312	376	395	210
	Mercury (Hg) (mg/kg)		0.0081	0.0107	0.0198	0.0089	<0.0050
	Molybdenum (Mo) (mg/kg)		0.86	0.59	1.05	1.00	0.58
	Nickel (Ni) (mg/kg)		20.2	19.2	22.0	24.9	15.6
	Phosphorus (P) (mg/kg)		426	354	283	408	405
	Potassium (K) (mg/kg)		1260	1360	1640	1720	900
	Selenium (Se) (mg/kg)		<0.20	<0.20	<0.20	<0.20	<0.20
	Silver (Ag) (mg/kg)		<0.10	<0.10	<0.10	<0.10	<0.10
	Sodium (Na) (mg/kg)		70	87	73	83	65
	Strontium (Sr) (mg/kg)		14.1	12.0	10.9	12.2	11.1
	Sulfur (S) (mg/kg)		<1000	<1000	<1000	<1000	<1000
	Thallium (Tl) (mg/kg)		0.118	0.126	0.160	0.156	0.098
	Tin (Sn) (mg/kg)		<2.0	<2.0	<2.0	<2.0	<2.0
	Titanium (Ti) (mg/kg)		539	486	602	530	393
	Tungsten (W) (mg/kg)		0.89	1.26	1.05	0.63	0.70
	Uranium (U) (mg/kg)		2.50	2.32	2.87	4.32	2.49
	Vanadium (V) (mg/kg)		20.2	18.0	23.6	23.0	14.4
	Zinc (Zn) (mg/kg)		33.7	35.9	41.1	45.2	26.9
	Zirconium (Zr) (mg/kg)		3.5	4.2	2.0	5.6	4.4

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L1988451-21 Soil 15-AUG-17 10:15 T2-1-SOIL	L1988451-25 Soil 15-AUG-17 10:15 T2-2-SOIL	L1988451-29 Soil 15-AUG-17 10:15 T2-3-SOIL	L1988451-33 Soil 15-AUG-17 10:15 T2-4-SOIL	L1988451-37 Soil 15-AUG-17 10:15 T2-5-SOIL
Grouping	Analyte				
<b>SOIL</b>					
<b>Physical Tests</b>	pH (1:2 soil:water) (pH)				
	6.91	5.38	6.91	6.47	5.13
<b>Metals</b>	Aluminum (Al) (mg/kg)				
	5950	4170	5030	5550	5580
	Antimony (Sb) (mg/kg)				
	<0.10	<0.10	<0.10	<0.10	<0.10
	Arsenic (As) (mg/kg)				
	2.14	1.07	1.67	1.66	1.59
	Barium (Ba) (mg/kg)				
	26.7	13.8	23.2	22.3	19.9
	Beryllium (Be) (mg/kg)				
	0.43	0.30	0.35	0.38	0.40
	Bismuth (Bi) (mg/kg)				
	0.67	0.26	0.33	0.43	0.37
	Boron (B) (mg/kg)				
	<5.0	<5.0	<5.0	<5.0	<5.0
	Cadmium (Cd) (mg/kg)				
	0.037	0.033	0.027	0.033	0.039
	Calcium (Ca) (mg/kg)				
	2050	1520	2230	1760	1250
	Chromium (Cr) (mg/kg)				
	15.6	8.95	13.8	15.0	13.7
	Cobalt (Co) (mg/kg)				
	3.97	2.80	3.82	3.71	3.76
	Copper (Cu) (mg/kg)				
	4.82	2.27	3.50	3.92	3.49
	Iron (Fe) (mg/kg)				
	12400	9420	11500	11900	11100
	Lead (Pb) (mg/kg)				
	6.80	4.36	5.30	5.27	6.15
	Lithium (Li) (mg/kg)				
	16.1	13.1	13.5	15.0	14.2
	Magnesium (Mg) (mg/kg)				
	3120	2250	2860	3120	2860
	Manganese (Mn) (mg/kg)				
	251	189	209	200	216
	Mercury (Hg) (mg/kg)				
	<0.0050	0.0068	<0.0050	<0.0050	0.0132
	Molybdenum (Mo) (mg/kg)				
	0.71	0.40	0.51	0.46	0.75
	Nickel (Ni) (mg/kg)				
	8.87	4.88	7.23	7.83	6.97
	Phosphorus (P) (mg/kg)				
	343	294	423	289	264
	Potassium (K) (mg/kg)				
	1160	680	1040	980	810
	Selenium (Se) (mg/kg)				
	<0.20	<0.20	<0.20	<0.20	<0.20
	Silver (Ag) (mg/kg)				
	<0.10	<0.10	<0.10	<0.10	<0.10
	Sodium (Na) (mg/kg)				
	80	<50	82	69	<50
	Strontium (Sr) (mg/kg)				
	12.0	8.18	12.3	9.81	7.46
	Sulfur (S) (mg/kg)				
	<1000	<1000	<1000	<1000	<1000
	Thallium (Tl) (mg/kg)				
	0.114	0.073	0.098	0.103	0.099
	Tin (Sn) (mg/kg)				
	<2.0	<2.0	<2.0	<2.0	<2.0
	Titanium (Ti) (mg/kg)				
	493	385	493	439	440
	Tungsten (W) (mg/kg)				
	0.51	0.62	<0.50	0.65	<0.50
	Uranium (U) (mg/kg)				
	4.78	1.73	3.24	3.29	3.17
	Vanadium (V) (mg/kg)				
	12.2	8.70	12.0	11.4	11.1
	Zinc (Zn) (mg/kg)				
	24.2	18.5	20.5	23.3	23.3
	Zirconium (Zr) (mg/kg)				
	8.8	3.5	8.5	6.7	4.0

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1988451-41	L1988451-45	L1988451-49	L1988451-53	L1988451-57
		Description	Soil	Soil	Soil	Soil	Soil
		Sampled Date	16-AUG-17	16-AUG-17	16-AUG-17	16-AUG-17	16-AUG-17
		Sampled Time	12:00	12:00	12:00	12:00	12:00
		Client ID	T3-1-SOIL	T3-2-SOIL	T3-3-SOIL	T3-4-SOIL	T3-5-SOIL
Grouping	Analyte						
<b>SOIL</b>							
<b>Physical Tests</b>	pH (1:2 soil:water) (pH)		6.93	5.58	6.49	6.64	5.49
<b>Metals</b>	Aluminum (Al) (mg/kg)		7930	11300	8040	7230	6200
	Antimony (Sb) (mg/kg)		<0.10	<0.10	<0.10	<0.10	<0.10
	Arsenic (As) (mg/kg)		2.94	3.47	3.01	3.33	1.92
	Barium (Ba) (mg/kg)		28.4	60.9	31.2	29.0	35.0
	Beryllium (Be) (mg/kg)		0.55	0.57	0.42	0.39	0.37
	Bismuth (Bi) (mg/kg)		0.67	1.17	0.57	0.55	0.69
	Boron (B) (mg/kg)		<5.0	<5.0	<5.0	<5.0	<5.0
	Cadmium (Cd) (mg/kg)		0.030	0.086	0.055	0.029	0.035
	Calcium (Ca) (mg/kg)		2160	1330	1960	2260	1220
	Chromium (Cr) (mg/kg)		20.7	35.4	28.6	26.9	13.8
	Cobalt (Co) (mg/kg)		5.51	6.39	6.54	5.47	4.28
	Copper (Cu) (mg/kg)		5.63	6.20	5.78	5.39	2.54
	Iron (Fe) (mg/kg)		16400	19900	17000	16200	14000
	Lead (Pb) (mg/kg)		6.16	8.73	7.26	6.36	5.38
	Lithium (Li) (mg/kg)		20.3	19.7	17.5	14.5	14.3
	Magnesium (Mg) (mg/kg)		4620	5300	4890	4190	3300
	Manganese (Mn) (mg/kg)		301	472	297	260	300
	Mercury (Hg) (mg/kg)		<0.0050	0.0247	<0.0050	<0.0050	0.0560
	Molybdenum (Mo) (mg/kg)		0.86	1.25	0.76	0.68	0.72
	Nickel (Ni) (mg/kg)		12.0	15.4	15.3	13.7	7.14
	Phosphorus (P) (mg/kg)		436	297	414	485	223
	Potassium (K) (mg/kg)		1370	1910	1330	1220	1220
	Selenium (Se) (mg/kg)		<0.20	<0.20	<0.20	<0.20	<0.20
	Silver (Ag) (mg/kg)		<0.10	<0.10	<0.10	<0.10	<0.10
	Sodium (Na) (mg/kg)		83	85	89	84	<50
	Strontium (Sr) (mg/kg)		12.9	13.0	13.3	14.0	8.89
	Sulfur (S) (mg/kg)		<1000	<1000	<1000	<1000	<1000
	Thallium (Tl) (mg/kg)		0.128	0.181	0.141	0.120	0.139
	Tin (Sn) (mg/kg)		<2.0	<2.0	<2.0	<2.0	<2.0
	Titanium (Ti) (mg/kg)		565	722	604	582	379
	Tungsten (W) (mg/kg)		0.84	0.68	0.53	0.64	0.53
	Uranium (U) (mg/kg)		2.86	2.40	2.55	2.99	1.10
	Vanadium (V) (mg/kg)		15.2	22.4	16.1	15.3	13.2
	Zinc (Zn) (mg/kg)		31.4	42.8	30.8	27.7	32.3
	Zirconium (Zr) (mg/kg)		6.4	1.5	5.9	6.2	1.2

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1988451-61	L1988451-65	L1988451-69	L1988451-73	L1988451-77
		Description	Soil	Soil	Soil	Soil	Soil
		Sampled Date	14-AUG-17	14-AUG-17	14-AUG-17	14-AUG-17	14-AUG-17
		Sampled Time	16:45	16:45	16:45	16:45	16:45
		Client ID	T4-1-SOIL	T4-2-SOIL	T4-3-SOIL	T4-4-SOIL	T4-5-SOIL
Grouping	Analyte						
<b>SOIL</b>							
<b>Physical Tests</b>	pH (1:2 soil:water) (pH)		5.95	6.85	6.16	6.01	5.77
<b>Metals</b>	Aluminum (Al) (mg/kg)		7270	6290	7190	9950	8310
	Antimony (Sb) (mg/kg)		<0.10	<0.10	<0.10	0.11	<0.10
	Arsenic (As) (mg/kg)		2.44	2.05	2.88	24.5	2.26
	Barium (Ba) (mg/kg)		34.9	33.6	29.3	29.9	29.7
	Beryllium (Be) (mg/kg)		0.43	0.39	0.43	0.41	0.50
	Bismuth (Bi) (mg/kg)		0.94	0.82	0.71	0.50	1.06
	Boron (B) (mg/kg)		<5.0	<5.0	<5.0	<5.0	<5.0
	Cadmium (Cd) (mg/kg)		0.030	0.036	0.033	0.077	0.031
	Calcium (Ca) (mg/kg)		2400	1810	2440	1820	1600
	Chromium (Cr) (mg/kg)		18.8	17.4	21.3	96.6	20.8
	Cobalt (Co) (mg/kg)		4.37	5.02	4.90	10.5	4.63
	Copper (Cu) (mg/kg)		5.43	5.33	5.77	15.2	4.45
	Iron (Fe) (mg/kg)		15400	14100	16200	20600	19000
	Lead (Pb) (mg/kg)		5.87	6.06	7.28	13.1	6.43
	Lithium (Li) (mg/kg)		19.7	20.5	17.6	19.9	21.9
	Magnesium (Mg) (mg/kg)		3900	3740	3900	6860	4030
	Manganese (Mn) (mg/kg)		314	285	252	275	235
	Mercury (Hg) (mg/kg)		0.0054	<0.0050	0.0055	0.0091	0.0121
	Molybdenum (Mo) (mg/kg)		0.82	1.02	0.90	0.62	1.02
	Nickel (Ni) (mg/kg)		9.65	9.87	11.1	38.8	9.90
	Phosphorus (P) (mg/kg)		515	333	437	309	302
	Potassium (K) (mg/kg)		1550	1430	1270	1030	1330
	Selenium (Se) (mg/kg)		<0.20	<0.20	<0.20	<0.20	<0.20
	Silver (Ag) (mg/kg)		<0.10	<0.10	<0.10	<0.10	<0.10
	Sodium (Na) (mg/kg)		77	83	95	92	75
	Strontium (Sr) (mg/kg)		11.5	9.43	12.9	11.9	10.6
	Sulfur (S) (mg/kg)		<1000	<1000	<1000	<1000	<1000
	Thallium (Tl) (mg/kg)		0.133	0.138	0.133	0.115	0.149
	Tin (Sn) (mg/kg)		<2.0	<2.0	<2.0	<2.0	<2.0
	Titanium (Ti) (mg/kg)		559	421	664	525	571
	Tungsten (W) (mg/kg)		0.65	<0.50	0.66	0.54	0.76
	Uranium (U) (mg/kg)		3.07	2.84	4.34	2.47	2.24
	Vanadium (V) (mg/kg)		15.6	13.4	15.5	21.6	19.2
	Zinc (Zn) (mg/kg)		31.9	29.5	28.2	41.6	30.7
	Zirconium (Zr) (mg/kg)		8.1	5.8	7.1	3.6	1.9

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1988451-81 Soil 15-AUG-17 09:30 T5-1-SOIL	L1988451-85 Soil 15-AUG-17 09:30 T5-2-SOIL	L1988451-89 Soil 15-AUG-17 09:30 T5-3-SOIL	L1988451-93 Soil 15-AUG-17 09:30 T5-4-SOIL	L1988451-97 Soil 15-AUG-17 09:30 T5-5-SOIL
Grouping	Analyte					
<b>SOIL</b>						
<b>Physical Tests</b>	pH (1:2 soil:water) (pH)	6.45	5.47	6.76	5.60	4.51
<b>Metals</b>	Aluminum (Al) (mg/kg)	13300	11500	6570	6760	7990
	Antimony (Sb) (mg/kg)	0.11	<0.10	<0.10	<0.10	0.13
	Arsenic (As) (mg/kg)	9.46	4.27	2.92	4.43	2.61
	Barium (Ba) (mg/kg)	54.9	51.7	24.4	25.0	50.4
	Beryllium (Be) (mg/kg)	0.54	0.49	0.25	0.29	0.37
	Bismuth (Bi) (mg/kg)	0.91	0.75	0.40	0.40	1.11
	Boron (B) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Cadmium (Cd) (mg/kg)	0.036	0.111	0.051	0.035	0.163
	Calcium (Ca) (mg/kg)	2270	1620	1280	1980	1770
	Chromium (Cr) (mg/kg)	101	64.2	65.7	37.3	27.2
	Cobalt (Co) (mg/kg)	9.99	7.15	5.64	5.81	4.56
	Copper (Cu) (mg/kg)	18.2	8.97	5.87	8.16	5.82
	Iron (Fe) (mg/kg)	25100	21500	13900	15800	17900
	Lead (Pb) (mg/kg)	9.99	10.2	5.01	6.52	7.91
	Lithium (Li) (mg/kg)	25.5	23.2	13.2	13.6	13.4
	Magnesium (Mg) (mg/kg)	8410	6080	4850	4090	3760
	Manganese (Mn) (mg/kg)	331	307	195	197	291
	Mercury (Hg) (mg/kg)	0.0078	0.0362	0.0146	<0.0050	0.0770
	Molybdenum (Mo) (mg/kg)	1.16	1.01	0.58	0.46	1.41
	Nickel (Ni) (mg/kg)	45.1	25.9	25.5	19.5	11.0
	Phosphorus (P) (mg/kg)	329	312	273	306	519
	Potassium (K) (mg/kg)	2240	2000	960	830	1570
	Selenium (Se) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Silver (Ag) (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Sodium (Na) (mg/kg)	182	85	<50	84	79
	Strontium (Sr) (mg/kg)	16.8	13.3	8.67	11.8	13.7
	Sulfur (S) (mg/kg)	<1000	<1000	<1000	<1000	<1000
	Thallium (Tl) (mg/kg)	0.192	0.181	0.101	0.089	0.165
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Titanium (Ti) (mg/kg)	730	633	384	434	635
	Tungsten (W) (mg/kg)	0.63	0.63	1.03	0.55	0.51
	Uranium (U) (mg/kg)	5.01	2.34	1.59	2.15	2.23
	Vanadium (V) (mg/kg)	28.6	24.1	15.3	14.6	20.2
	Zinc (Zn) (mg/kg)	45.1	46.1	26.2	25.9	38.9
	Zirconium (Zr) (mg/kg)	7.9	1.8	1.2	3.4	2.0

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1988451-101 Soil 15-AUG-17 08:00 T6-1-SOIL	L1988451-105 Soil 15-AUG-17 08:00 T6-2-SOIL	L1988451-109 Soil 15-AUG-17 08:00 T6-3-SOIL	L1988451-113 Soil 15-AUG-17 08:00 T6-4-SOIL	L1988451-117 Soil 15-AUG-17 08:00 T6-5-SOIL
Grouping	Analyte					
<b>SOIL</b>						
<b>Physical Tests</b>	pH (1:2 soil:water) (pH)	6.92	6.64	6.13	5.69	6.36
<b>Metals</b>	Aluminum (Al) (mg/kg)	7430	11700	6970	9580	5770
	Antimony (Sb) (mg/kg)	<0.10	0.20	<0.10	<0.10	<0.10
	Arsenic (As) (mg/kg)	4.54	14.0	4.09	6.21	4.36
	Barium (Ba) (mg/kg)	40.7	66.5	34.8	30.2	30.0
	Beryllium (Be) (mg/kg)	0.38	0.45	0.34	0.43	0.28
	Bismuth (Bi) (mg/kg)	0.47	0.70	0.42	0.53	0.42
	Boron (B) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Cadmium (Cd) (mg/kg)	0.042	0.060	0.036	0.059	0.039
	Calcium (Ca) (mg/kg)	2150	2560	1530	1460	2030
	Chromium (Cr) (mg/kg)	46.9	147	41.1	63.1	40.6
	Cobalt (Co) (mg/kg)	7.15	14.0	6.83	7.96	6.17
	Copper (Cu) (mg/kg)	8.37	21.3	10.0	10.5	7.12
	Iron (Fe) (mg/kg)	18900	30200	17600	24400	16700
	Lead (Pb) (mg/kg)	7.04	8.59	6.67	7.64	6.11
	Lithium (Li) (mg/kg)	19.1	22.9	16.9	20.8	15.0
	Magnesium (Mg) (mg/kg)	5310	9610	4850	6060	4320
	Manganese (Mn) (mg/kg)	265	383	213	275	236
	Mercury (Hg) (mg/kg)	<0.0050	<0.0050	0.0051	0.0111	<0.0050
	Molybdenum (Mo) (mg/kg)	0.80	0.78	0.58	0.68	0.78
	Nickel (Ni) (mg/kg)	22.7	78.1	20.8	28.2	20.9
	Phosphorus (P) (mg/kg)	421	504	347	362	489
	Potassium (K) (mg/kg)	1710	2250	1340	1120	1340
	Selenium (Se) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Silver (Ag) (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Sodium (Na) (mg/kg)	83	93	68	70	64
	Strontium (Sr) (mg/kg)	13.3	17.0	8.91	11.7	11.7
	Sulfur (S) (mg/kg)	<1000	<1000	<1000	<1000	<1000
	Thallium (Tl) (mg/kg)	0.137	0.174	0.130	0.131	0.114
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Titanium (Ti) (mg/kg)	597	581	470	544	492
	Tungsten (W) (mg/kg)	<0.50	0.55	<0.50	0.71	0.60
	Uranium (U) (mg/kg)	3.16	2.71	2.42	1.84	2.66
	Vanadium (V) (mg/kg)	19.1	29.8	17.5	22.9	15.7
	Zinc (Zn) (mg/kg)	32.5	45.4	30.5	34.7	25.5
	Zirconium (Zr) (mg/kg)	7.4	12.9	3.5	1.6	8.8

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1988451-121 Soil 15-AUG-17 18:30 T7-1-SOIL	L1988451-125 Soil 15-AUG-17 18:30 T7-2-SOIL	L1988451-129 Soil 15-AUG-17 18:30 T7-3-SOIL	L1988451-133 Soil 15-AUG-17 18:30 T7-4-SOIL	L1988451-137 Soil 15-AUG-17 18:30 T7-5-SOIL
Grouping	Analyte					
<b>SOIL</b>						
<b>Physical Tests</b>	pH (1:2 soil:water) (pH)	5.78	6.32	6.10	5.92	6.68
<b>Metals</b>	Aluminum (Al) (mg/kg)	11800	10300	13300	10600	8100
	Antimony (Sb) (mg/kg)	0.21	0.14	0.28	0.16	<0.10
	Arsenic (As) (mg/kg)	30.1	22.2	32.7	31.6	13.1
	Barium (Ba) (mg/kg)	27.4	28.9	40.6	24.3	29.5
	Beryllium (Be) (mg/kg)	0.33	0.40	0.48	0.35	0.39
	Bismuth (Bi) (mg/kg)	0.40	0.45	0.53	0.38	0.57
	Boron (B) (mg/kg)	<5.0	<5.0	5.7	<5.0	<5.0
	Cadmium (Cd) (mg/kg)	0.176	0.088	0.145	0.180	0.103
	Calcium (Ca) (mg/kg)	1060	1600	2010	1770	2090
	Chromium (Cr) (mg/kg)	53.4	40.9	94.1	37.5	28.7
	Cobalt (Co) (mg/kg)	12.1	12.1	16.0	10.9	9.64
	Copper (Cu) (mg/kg)	15.2	17.7	25.8	15.6	12.2
	Iron (Fe) (mg/kg)	31200	31300	38000	36100	23200
	Lead (Pb) (mg/kg)	14.4	15.3	15.0	18.4	12.1
	Lithium (Li) (mg/kg)	21.9	22.0	23.8	22.5	20.3
	Magnesium (Mg) (mg/kg)	7690	6880	10400	6930	5300
	Manganese (Mn) (mg/kg)	295	329	438	294	284
	Mercury (Hg) (mg/kg)	0.0232	<0.0050	0.0077	0.0096	<0.0050
	Molybdenum (Mo) (mg/kg)	0.83	0.87	1.07	0.71	0.83
	Nickel (Ni) (mg/kg)	34.5	27.8	50.1	26.1	20.3
	Phosphorus (P) (mg/kg)	264	401	499	536	485
	Potassium (K) (mg/kg)	1040	1370	1790	950	1110
	Selenium (Se) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Silver (Ag) (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Sodium (Na) (mg/kg)	<50	63	64	<50	63
	Strontium (Sr) (mg/kg)	8.90	12.3	13.7	10.8	12.2
	Sulfur (S) (mg/kg)	<1000	<1000	<1000	<1000	<1000
	Thallium (Tl) (mg/kg)	0.111	0.117	0.150	0.106	0.133
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Titanium (Ti) (mg/kg)	395	450	513	438	568
	Tungsten (W) (mg/kg)	<0.50	<0.50	<0.50	0.50	<0.50
	Uranium (U) (mg/kg)	1.43	1.98	3.02	1.96	3.80
	Vanadium (V) (mg/kg)	23.8	20.4	27.3	21.4	18.1
	Zinc (Zn) (mg/kg)	52.3	42.0	53.2	48.7	36.9
	Zirconium (Zr) (mg/kg)	2.1	4.2	4.1	5.0	4.9

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1988451-141 Tissue 18-AUG-17 15:00 T8-1-SOIL	L1988451-145 Tissue 18-AUG-17 15:00 T8-2-SOIL	L1988451-149 Tissue 18-AUG-17 15:00 T8-3-SOIL	L1988451-153 Tissue 18-AUG-17 15:00 T8-4-SOIL	L1988451-157 Tissue 18-AUG-17 15:00 T8-5-SOIL
Grouping	Analyte					
<b>SOIL</b>						
<b>Physical Tests</b>	pH (1:2 soil:water) (pH)	6.62	6.76	6.47	6.39	7.44
<b>Metals</b>	Aluminum (Al) (mg/kg)	5850	7180	6920	4110	5960
	Antimony (Sb) (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Arsenic (As) (mg/kg)	2.01	2.71	1.92	1.37	1.95
	Barium (Ba) (mg/kg)	24.3	38.5	31.3	16.3	27.9
	Beryllium (Be) (mg/kg)	0.23	0.21	0.28	0.24	0.31
	Bismuth (Bi) (mg/kg)	0.22	0.28	0.28	0.31	0.42
	Boron (B) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Cadmium (Cd) (mg/kg)	0.031	0.038	0.039	0.025	0.025
	Calcium (Ca) (mg/kg)	2310	2410	2360	1840	2170
	Chromium (Cr) (mg/kg)	33.1	37.5	30.8	14.0	23.1
	Cobalt (Co) (mg/kg)	5.76	6.40	5.62	3.23	5.01
	Copper (Cu) (mg/kg)	5.38	8.13	11.6	5.24	6.80
	Iron (Fe) (mg/kg)	12800	14500	15400	9360	12200
	Lead (Pb) (mg/kg)	4.70	5.01	5.73	3.98	5.05
	Lithium (Li) (mg/kg)	9.7	11.6	12.7	8.3	10.9
	Magnesium (Mg) (mg/kg)	3790	4600	4530	2460	3570
	Manganese (Mn) (mg/kg)	234	189	188	154	177
	Mercury (Hg) (mg/kg)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Molybdenum (Mo) (mg/kg)	0.52	0.66	0.40	0.56	0.57
	Nickel (Ni) (mg/kg)	16.0	17.3	15.9	7.45	11.9
	Phosphorus (P) (mg/kg)	398	556	543	414	408
	Potassium (K) (mg/kg)	1000	1740	1550	650	1190
	Selenium (Se) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Silver (Ag) (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Sodium (Na) (mg/kg)	68	67	52	<50	86
	Strontium (Sr) (mg/kg)	22.6	19.4	20.5	16.3	18.8
	Sulfur (S) (mg/kg)	<1000	<1000	<1000	<1000	<1000
	Thallium (Tl) (mg/kg)	0.072	0.102	0.103	<0.050	0.072
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Titanium (Ti) (mg/kg)	571	623	584	375	491
	Tungsten (W) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Uranium (U) (mg/kg)	1.94	1.66	1.34	2.10	2.75
	Vanadium (V) (mg/kg)	15.4	20.3	18.3	10.9	14.4
	Zinc (Zn) (mg/kg)	20.9	25.5	27.0	17.3	23.1
	Zirconium (Zr) (mg/kg)	6.2	7.4	5.1	6.2	8.2

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1988451-161 Tissue 21-AUG-17 16:00 C1-1-SOIL	L1988451-165 Tissue 21-AUG-17 16:00 C1-2-SOIL	L1988451-169 Tissue 21-AUG-17 16:00 C1-3-SOIL	L1988451-173 Tissue 21-AUG-17 16:00 C1-4-SOIL	L1988451-177 Tissue 21-AUG-17 16:00 C1-5-SOIL
Grouping	Analyte					
<b>SOIL</b>						
<b>Physical Tests</b>	pH (1:2 soil:water) (pH)	5.64	5.89	5.69	5.84	6.24
<b>Metals</b>	Aluminum (Al) (mg/kg)	5730	5240	5850	7120	4700
	Antimony (Sb) (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Arsenic (As) (mg/kg)	2.51	2.35	2.58	2.63	2.51
	Barium (Ba) (mg/kg)	21.1	17.8	20.4	30.3	18.0
	Beryllium (Be) (mg/kg)	0.24	0.22	0.31	0.37	0.27
	Bismuth (Bi) (mg/kg)	0.27	0.27	0.34	0.43	0.30
	Boron (B) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Cadmium (Cd) (mg/kg)	0.024	0.024	0.026	0.025	0.024
	Calcium (Ca) (mg/kg)	1630	1630	2250	1730	2060
	Chromium (Cr) (mg/kg)	28.1	26.6	24.9	32.2	23.0
	Cobalt (Co) (mg/kg)	5.57	5.10	4.71	4.68	3.88
	Copper (Cu) (mg/kg)	3.97	3.36	3.58	4.80	3.71
	Iron (Fe) (mg/kg)	13900	12500	13200	13500	11500
	Lead (Pb) (mg/kg)	5.34	5.09	5.64	6.01	4.71
	Lithium (Li) (mg/kg)	8.9	7.3	11.2	13.1	8.8
	Magnesium (Mg) (mg/kg)	3500	3080	3120	4020	2990
	Manganese (Mn) (mg/kg)	215	206	194	188	145
	Mercury (Hg) (mg/kg)	<0.0050	<0.0050	<0.0050	0.0056	<0.0050
	Molybdenum (Mo) (mg/kg)	0.44	0.44	0.52	0.68	0.47
	Nickel (Ni) (mg/kg)	14.0	13.0	13.0	17.0	13.1
	Phosphorus (P) (mg/kg)	365	371	447	260	399
	Potassium (K) (mg/kg)	830	720	790	1260	790
	Selenium (Se) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Silver (Ag) (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Sodium (Na) (mg/kg)	58	51	64	75	69
	Strontium (Sr) (mg/kg)	13.4	14.4	19.1	16.2	17.7
	Sulfur (S) (mg/kg)	<1000	<1000	<1000	<1000	<1000
	Thallium (Tl) (mg/kg)	0.073	0.060	0.075	0.094	0.077
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Titanium (Ti) (mg/kg)	409	400	488	487	411
	Tungsten (W) (mg/kg)	<0.50	<0.50	0.58	<0.50	<0.50
	Uranium (U) (mg/kg)	1.90	1.80	1.88	2.88	2.78
	Vanadium (V) (mg/kg)	12.4	12.0	13.3	15.5	11.2
	Zinc (Zn) (mg/kg)	20.1	17.9	19.3	23.9	17.4
	Zirconium (Zr) (mg/kg)	6.0	5.8	5.5	6.4	8.9

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1988451-181 Tissue 21-AUG-17 11:00 C2-1-SOIL	L1988451-185 Tissue 21-AUG-17 11:00 C2-2-SOIL	L1988451-189 Tissue 21-AUG-17 11:00 C2-3-SOIL	L1988451-193 Tissue 21-AUG-17 11:00 C2-4-SOIL	L1988451-197 Tissue 21-AUG-17 11:00 C2-5-SOIL
Grouping	Analyte					
<b>SOIL</b>						
<b>Physical Tests</b>	pH (1:2 soil:water) (pH)	5.88	6.57	5.52	6.07	5.56
<b>Metals</b>	Aluminum (Al) (mg/kg)	13100	9030	11900	12000	11100
	Antimony (Sb) (mg/kg)	0.12	<0.10	<0.10	<0.10	<0.10
	Arsenic (As) (mg/kg)	8.14	5.07	7.66	7.26	7.24
	Barium (Ba) (mg/kg)	37.2	26.4	23.7	31.7	24.9
	Beryllium (Be) (mg/kg)	0.40	0.28	0.35	0.35	0.35
	Bismuth (Bi) (mg/kg)	0.55	0.78	1.73	0.41	0.38
	Boron (B) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Cadmium (Cd) (mg/kg)	0.047	0.079	0.170	0.047	0.071
	Calcium (Ca) (mg/kg)	2490	2240	2150	2810	2540
	Chromium (Cr) (mg/kg)	125	90.6	124	111	77.4
	Cobalt (Co) (mg/kg)	11.6	9.97	11.2	10.4	8.92
	Copper (Cu) (mg/kg)	13.8	11.5	11.8	11.8	6.96
	Iron (Fe) (mg/kg)	27200	21000	26200	28400	26500
	Lead (Pb) (mg/kg)	8.17	6.44	7.67	7.60	7.05
	Lithium (Li) (mg/kg)	15.2	11.1	13.8	13.9	16.6
	Magnesium (Mg) (mg/kg)	9540	7150	8970	8870	7330
	Manganese (Mn) (mg/kg)	287	286	286	279	267
	Mercury (Hg) (mg/kg)	0.0120	<0.0050	0.0138	0.0056	0.0078
	Molybdenum (Mo) (mg/kg)	0.83	0.87	0.68	0.59	0.50
	Nickel (Ni) (mg/kg)	64.7	49.4	65.2	57.3	40.1
	Phosphorus (P) (mg/kg)	400	412	272	369	410
	Potassium (K) (mg/kg)	1150	860	880	1240	1080
	Selenium (Se) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Silver (Ag) (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Sodium (Na) (mg/kg)	62	65	75	64	<50
	Strontium (Sr) (mg/kg)	27.3	21.3	24.5	33.0	27.9
	Sulfur (S) (mg/kg)	<1000	<1000	<1000	<1000	<1000
	Thallium (Tl) (mg/kg)	0.116	0.090	0.107	0.116	0.077
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Titanium (Ti) (mg/kg)	563	473	626	718	613
	Tungsten (W) (mg/kg)	<0.50	<0.50	<0.50	0.50	<0.50
	Uranium (U) (mg/kg)	1.71	1.40	1.12	1.38	0.952
	Vanadium (V) (mg/kg)	28.7	20.3	26.7	27.4	24.0
	Zinc (Zn) (mg/kg)	40.4	36.8	73.3	36.2	36.1
	Zirconium (Zr) (mg/kg)	2.2	2.5	1.8	3.6	2.7

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1988451-201 Tissue 21-AUG-17 13:30 C3-1-SOIL	L1988451-205 Tissue 21-AUG-17 13:30 C3-2-SOIL	L1988451-209 Tissue 21-AUG-17 13:30 C3-3-SOIL	L1988451-213 Tissue 21-AUG-17 13:30 C3-4-SOIL	L1988451-217 Tissue 21-AUG-17 13:30 C3-5-SOIL
Grouping	Analyte					
<b>SOIL</b>						
<b>Physical Tests</b>	pH (1:2 soil:water) (pH)	6.30	5.76	5.59	6.02	5.94
<b>Metals</b>	Aluminum (Al) (mg/kg)	10600	11900	13500	9750	13600
	Antimony (Sb) (mg/kg)	0.12	0.11	0.11	<0.10	<0.10
	Arsenic (As) (mg/kg)	7.49	36.1	10.0	5.73	8.20
	Barium (Ba) (mg/kg)	33.1	31.8	33.1	28.3	30.9
	Beryllium (Be) (mg/kg)	0.30	0.35	0.39	0.27	0.37
	Bismuth (Bi) (mg/kg)	0.41	0.54	0.50	0.36	0.49
	Boron (B) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Cadmium (Cd) (mg/kg)	0.053	0.111	0.072	0.056	0.067
	Calcium (Ca) (mg/kg)	2780	2450	2580	2750	1890
	Chromium (Cr) (mg/kg)	88.5	98.9	117	98.2	150
	Cobalt (Co) (mg/kg)	11.5	11.6	12.0	11.6	12.8
	Copper (Cu) (mg/kg)	11.4	18.9	13.9	13.9	8.83
	Iron (Fe) (mg/kg)	24200	26700	30800	24300	28700
	Lead (Pb) (mg/kg)	7.54	13.8	8.40	6.64	7.79
	Lithium (Li) (mg/kg)	12.9	14.8	16.8	11.4	15.9
	Magnesium (Mg) (mg/kg)	7590	8320	9380	7550	10800
	Manganese (Mn) (mg/kg)	302	312	326	303	321
	Mercury (Hg) (mg/kg)	0.0058	0.0119	0.0147	<0.0050	0.0093
	Molybdenum (Mo) (mg/kg)	0.46	0.72	0.71	0.51	0.72
	Nickel (Ni) (mg/kg)	64.8	52.7	58.6	56.3	71.8
	Phosphorus (P) (mg/kg)	373	290	309	536	313
	Potassium (K) (mg/kg)	1180	1190	1230	1140	1330
	Selenium (Se) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Silver (Ag) (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10
	Sodium (Na) (mg/kg)	54	52	64	<50	58
	Strontium (Sr) (mg/kg)	31.4	29.3	29.9	26.2	21.7
	Sulfur (S) (mg/kg)	<1000	<1000	<1000	<1000	<1000
	Thallium (Tl) (mg/kg)	0.102	0.122	0.121	0.106	0.111
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Titanium (Ti) (mg/kg)	596	693	748	557	558
	Tungsten (W) (mg/kg)	<0.50	<0.50	0.59	<0.50	0.53
	Uranium (U) (mg/kg)	1.56	1.13	1.36	1.51	1.00
	Vanadium (V) (mg/kg)	22.8	26.9	31.4	22.4	30.7
	Zinc (Zn) (mg/kg)	33.9	47.1	48.8	32.5	40.5
	Zirconium (Zr) (mg/kg)	3.8	1.4	2.1	6.5	2.6

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1988451-2 Tissue 15-AUG-17 16:30 T1-1-SEDGE	L1988451-3 Tissue 15-AUG-17 16:30 T1-1-LICHEN	L1988451-4 Tissue 15-AUG-17 16:30 T1-1-BERRIES	L1988451-6 Tissue 15-AUG-17 16:30 T1-2-SEDGE	L1988451-7 Tissue 15-AUG-17 16:30 T1-2-LICHEN
Grouping	Analyte					
<b>TISSUE</b>						
<b>Physical Tests</b>	% Moisture (%)	43.3	15.2	85.1	46.7	15.1
<b>Metals</b>	Aluminum (Al)-Total (mg/kg wwt)	176	678	8.83	486	4390
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	0.0057	<0.0020	0.0052	0.0354
	Arsenic (As)-Total (mg/kg wwt)	0.126	0.843	0.0081	0.443	4.31
	Barium (Ba)-Total (mg/kg wwt)	11.2	9.21	0.655	19.1	26.4
	Beryllium (Be)-Total (mg/kg wwt)	0.0079	0.0226	<0.0020	0.0194	0.101
	Bismuth (Bi)-Total (mg/kg wwt)	0.0030	0.0348	<0.0020	0.0139	0.103
	Boron (B)-Total (mg/kg wwt)	1.20	0.54	0.47	2.62	1.87
	Cadmium (Cd)-Total (mg/kg wwt)	0.0121	0.0643	<0.0010	0.0483	0.143
	Calcium (Ca)-Total (mg/kg wwt)	901	5180	162	3010	5700
	Cesium (Cs)-Total (mg/kg wwt)	0.0340	0.175	0.0033	0.0872	0.345
	Chromium (Cr)-Total (mg/kg wwt)	3.49	13.1	0.167	7.73	81.1
	Cobalt (Co)-Total (mg/kg wwt)	0.256	0.586	0.0090	0.398	3.58
	Copper (Cu)-Total (mg/kg wwt)	0.972	1.36	0.611	2.78	7.36
	Iron (Fe)-Total (mg/kg wwt)	325	1440	19.4	947	9280
	Lead (Pb)-Total (mg/kg wwt)	0.126	1.29	<0.0040	0.359	2.91
	Lithium (Li)-Total (mg/kg wwt)	0.17	0.45	<0.10	0.51	3.14
	Magnesium (Mg)-Total (mg/kg wwt)	507	839	74.1	864	4230
	Manganese (Mn)-Total (mg/kg wwt)	170	97.6	7.00	46.1	230
	Mercury (Hg)-Total (mg/kg wwt)	0.0059	0.0604	<0.0010	0.0052	0.0642
	Molybdenum (Mo)-Total (mg/kg wwt)	0.368	0.272	0.0080	0.392	0.961
	Nickel (Ni)-Total (mg/kg wwt)	2.52	4.33	0.167	3.23	27.6
	Phosphorus (P)-Total (mg/kg wwt)	462	494	135	317	466
	Potassium (K)-Total (mg/kg wwt)	3420	1340	1310	3330	951
	Rubidium (Rb)-Total (mg/kg wwt)	6.49	5.16	3.33	2.87	4.61
	Selenium (Se)-Total (mg/kg wwt)	0.012	0.060	<0.010	0.017	0.093
	Sodium (Na)-Total (mg/kg wwt)	17.9	65.4	<4.0	13.6	46.4
	Strontium (Sr)-Total (mg/kg wwt)	4.19	11.8	0.312	10.1	17.4
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0080 <sup>DLA</sup>
	Thallium (Tl)-Total (mg/kg wwt)	0.00297	0.0172	<0.00040	0.00404	0.0197
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	0.056	<0.020	0.068
	Uranium (U)-Total (mg/kg wwt)	0.0146	0.0917	0.00081	0.152	0.449
	Vanadium (V)-Total (mg/kg wwt)	0.389	1.40	0.020	0.974	9.15
	Zinc (Zn)-Total (mg/kg wwt)	9.29	13.8	0.74	10.2	26.0
	Zirconium (Zr)-Total (mg/kg wwt)	0.199	1.03	<0.040	0.444	3.45

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1988451-8	L1988451-10	L1988451-11	L1988451-12	L1988451-14
		Description	Tissue	Tissue	Tissue	Tissue	Tissue
		Sampled Date	15-AUG-17	15-AUG-17	15-AUG-17	15-AUG-17	15-AUG-17
		Sampled Time	16:30	16:30	16:30	16:30	16:30
		Client ID	T1-2-BERRIES	T1-3-SEDGE	T1-3-LICHEN	T1-3-BERRIES	T1-4-SEDGE
Grouping	Analyte						
<b>TISSUE</b>							
<b>Physical Tests</b>	% Moisture (%)	86.8	45.4	14.9	86.2	45.6	
<b>Metals</b>	Aluminum (Al)-Total (mg/kg wwt)	7.94	170	1890	7.82	207	
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	0.0028	0.0174	<0.0020	0.0023	
	Arsenic (As)-Total (mg/kg wwt)	0.0096	0.116	1.91	0.0104	0.234	
	Barium (Ba)-Total (mg/kg wwt)	0.797	8.91	16.3	0.958	10.9	
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	0.0066	0.0617	<0.0020	0.0054	
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	0.0026	0.0558	<0.0020	0.0030	
	Boron (B)-Total (mg/kg wwt)	0.65	1.12	0.77	0.63	1.88	
	Cadmium (Cd)-Total (mg/kg wwt)	0.0020	0.0082	0.0885	0.0017	0.0094	
	Calcium (Ca)-Total (mg/kg wwt)	171	930	5530	173	1380	
	Cesium (Cs)-Total (mg/kg wwt)	0.0029	0.0248	0.316	0.0024	0.0432	
	Chromium (Cr)-Total (mg/kg wwt)	0.152	3.52	29.9	0.140	4.23	
	Cobalt (Co)-Total (mg/kg wwt)	0.0095	0.221	1.72	0.0139	0.220	
	Copper (Cu)-Total (mg/kg wwt)	0.660	0.694	3.08	0.506	1.53	
	Iron (Fe)-Total (mg/kg wwt)	17.4	313	3980	16.1	418	
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	0.114	2.44	0.0040	0.158	
	Lithium (Li)-Total (mg/kg wwt)	<0.10	0.19	1.57	<0.10	0.18	
	Magnesium (Mg)-Total (mg/kg wwt)	69.4	493	2180	71.2	580	
	Manganese (Mn)-Total (mg/kg wwt)	6.13	154	130	5.71	150	
	Mercury (Hg)-Total (mg/kg wwt)	<0.0010	0.0053	0.0719	<0.0010	0.0060	
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0098	0.329	0.638	0.0077	0.547	
	Nickel (Ni)-Total (mg/kg wwt)	0.167	2.26	10.4	0.256	1.81	
	Phosphorus (P)-Total (mg/kg wwt)	123	320	547	151	398	
	Potassium (K)-Total (mg/kg wwt)	1170	2520	1360	1150	2860	
	Rubidium (Rb)-Total (mg/kg wwt)	2.58	3.25	4.79	2.16	5.05	
	Selenium (Se)-Total (mg/kg wwt)	<0.010	<0.010	0.078	<0.010	0.015	
	Sodium (Na)-Total (mg/kg wwt)	<4.0	20.7	160	<4.0	11.2	
	Strontium (Sr)-Total (mg/kg wwt)	0.304	3.91	19.0	0.358	5.11	
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	0.0041	<0.0040	<0.0040	
	Thallium (Tl)-Total (mg/kg wwt)	<0.00040	0.00219	0.0177	<0.00040	0.00195	
	Tin (Sn)-Total (mg/kg wwt)	0.062	<0.020	0.046	0.028	<0.020	
	Uranium (U)-Total (mg/kg wwt)	0.00075	0.0164	0.250	0.00078	0.0202	
	Vanadium (V)-Total (mg/kg wwt)	<0.020	0.381	3.71	<0.020	0.466	
	Zinc (Zn)-Total (mg/kg wwt)	0.80	7.94	20.4	1.27	9.68	
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	0.199	2.39	<0.040	0.248	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1988451-15 Tissue 15-AUG-17 16:30 T1-4-LICHEN	L1988451-16 Tissue 15-AUG-17 16:30 T1-4-BERRIES	L1988451-18 Tissue 15-AUG-17 16:30 T1-5-SEDGE	L1988451-19 Tissue 15-AUG-17 16:30 T1-5-LICHEN	L1988451-20 Tissue 15-AUG-17 16:30 T1-5-BERRIES
Grouping	Analyte					
<b>TISSUE</b>						
<b>Physical Tests</b>	% Moisture (%)	14.6	84.7	47.2	24.0	87.9
<b>Metals</b>	Aluminum (Al)-Total (mg/kg wwt)	647	10.9	141	2280	8.37
	Antimony (Sb)-Total (mg/kg wwt)	0.0067	<0.0020	<0.0020	0.0254	<0.0020
	Arsenic (As)-Total (mg/kg wwt)	0.871	0.0099	0.119	2.30	0.0128
	Barium (Ba)-Total (mg/kg wwt)	8.04	0.689	11.3	26.3	0.750
	Beryllium (Be)-Total (mg/kg wwt)	0.0213	<0.0020	0.0058	0.0499	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)	0.0247	<0.0020	0.0026	0.0461	<0.0020
	Boron (B)-Total (mg/kg wwt)	0.63	0.65	2.89	1.24	0.49
	Cadmium (Cd)-Total (mg/kg wwt)	0.0471	<0.0010	0.0333	0.0522	<0.0010
	Calcium (Ca)-Total (mg/kg wwt)	3670	163	1870	2960	161
	Cesium (Cs)-Total (mg/kg wwt)	0.160	0.0017	0.0183	0.192	0.0041
	Chromium (Cr)-Total (mg/kg wwt)	13.8	0.190	2.38	45.3	0.153
	Cobalt (Co)-Total (mg/kg wwt)	0.577	0.0106	0.182	2.12	0.0098
	Copper (Cu)-Total (mg/kg wwt)	1.43	0.764	2.55	4.00	0.602
	Iron (Fe)-Total (mg/kg wwt)	1410	23.4	270	5350	19.9
	Lead (Pb)-Total (mg/kg wwt)	1.11	0.0042	0.166	1.78	0.0051
	Lithium (Li)-Total (mg/kg wwt)	0.46	<0.10	0.18	1.73	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	788	84.3	594	2320	62.2
	Manganese (Mn)-Total (mg/kg wwt)	90.9	7.36	211	230	5.64
	Mercury (Hg)-Total (mg/kg wwt)	0.0817	<0.0010	0.0055	0.0897	<0.0010
	Molybdenum (Mo)-Total (mg/kg wwt)	0.233	0.0170	1.16	0.639	0.0115
	Nickel (Ni)-Total (mg/kg wwt)	4.55	0.197	1.78	15.7	0.157
	Phosphorus (P)-Total (mg/kg wwt)	421	152	572	386	126
	Potassium (K)-Total (mg/kg wwt)	1260	1160	4590	837	980
	Rubidium (Rb)-Total (mg/kg wwt)	3.44	1.73	2.70	3.29	3.02
	Selenium (Se)-Total (mg/kg wwt)	0.064	<0.010	0.018	0.067	<0.010
	Sodium (Na)-Total (mg/kg wwt)	41.8	<4.0	12.3	39.6	<4.0
	Strontium (Sr)-Total (mg/kg wwt)	9.73	0.335	5.77	9.27	0.387
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	0.0048	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	0.0112	<0.00040	0.00239	0.0226	<0.00040
	Tin (Sn)-Total (mg/kg wwt)	0.034	0.055	<0.020	0.035	0.036
	Uranium (U)-Total (mg/kg wwt)	0.0962	0.00090	0.0283	0.210	0.00086
	Vanadium (V)-Total (mg/kg wwt)	1.42	0.023	0.278	5.00	<0.020
	Zinc (Zn)-Total (mg/kg wwt)	10.9	1.13	9.40	15.5	0.75
	Zirconium (Zr)-Total (mg/kg wwt)	0.988	<0.040	0.205	2.10	<0.040

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1988451-22 Tissue 15-AUG-17 10:15 T2-1-SEDGE	L1988451-23 Tissue 15-AUG-17 10:15 T2-1-LICHEN	L1988451-24 Tissue 15-AUG-17 10:15 T2-1-BERRIES	L1988451-26 Tissue 15-AUG-17 10:15 T2-2-SEDGE	L1988451-27 Tissue 15-AUG-17 10:15 T2-2-LICHEN
Grouping	Analyte					
<b>TISSUE</b>						
<b>Physical Tests</b>	% Moisture (%)	45.2	34.9	86.3	36.8	14.9
<b>Metals</b>	Aluminum (Al)-Total (mg/kg wwt)	138	1760	3.63	157	530
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	0.0478	<0.0020	0.0023	0.0073
	Arsenic (As)-Total (mg/kg wwt)	0.133	1.08	0.0079	0.109	0.830
	Barium (Ba)-Total (mg/kg wwt)	13.6	19.1	1.85	18.8	9.06
	Beryllium (Be)-Total (mg/kg wwt)	0.0083	0.121	<0.0020	0.0107	0.0215
	Bismuth (Bi)-Total (mg/kg wwt)	0.0026	0.0641	<0.0020	0.0030	0.0473
	Boron (B)-Total (mg/kg wwt)	1.21	0.69	0.66	1.26	0.34
	Cadmium (Cd)-Total (mg/kg wwt)	0.0091	0.0509	0.0043	0.0129	0.0687
	Calcium (Ca)-Total (mg/kg wwt)	962	1150	193	848	3400
	Cesium (Cs)-Total (mg/kg wwt)	0.0513	0.327	0.0036	0.0810	0.167
	Chromium (Cr)-Total (mg/kg wwt)	2.17	14.4	0.034	2.08	9.74
	Cobalt (Co)-Total (mg/kg wwt)	0.151	0.972	0.0041	0.163	0.454
	Copper (Cu)-Total (mg/kg wwt)	0.815	1.74	0.603	0.856	1.25
	Iron (Fe)-Total (mg/kg wwt)	247	2890	6.31	269	1160
	Lead (Pb)-Total (mg/kg wwt)	0.156	3.55	0.0053	0.212	2.14
	Lithium (Li)-Total (mg/kg wwt)	0.14	1.14	<0.10	0.14	0.36
	Magnesium (Mg)-Total (mg/kg wwt)	377	969	78.8	337	667
	Manganese (Mn)-Total (mg/kg wwt)	159	107	24.9	115	59.9
	Mercury (Hg)-Total (mg/kg wwt)	0.0073	0.0933	<0.0010	0.0068	0.0819
	Molybdenum (Mo)-Total (mg/kg wwt)	0.471	0.342	0.0144	0.462	0.321
	Nickel (Ni)-Total (mg/kg wwt)	1.56	5.70	0.150	1.31	3.46
	Phosphorus (P)-Total (mg/kg wwt)	373	214	147	250	293
	Potassium (K)-Total (mg/kg wwt)	2740	427	1140	2960	1070
	Rubidium (Rb)-Total (mg/kg wwt)	5.69	4.52	3.24	10.6	6.29
	Selenium (Se)-Total (mg/kg wwt)	0.021	0.109	<0.010	<0.010	0.063
	Sodium (Na)-Total (mg/kg wwt)	22.2	17.3	<4.0	14.3	37.5
	Strontium (Sr)-Total (mg/kg wwt)	5.18	5.78	0.520	4.49	9.38
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	0.00346	0.0275	<0.00040	0.00551	0.0106
	Tin (Sn)-Total (mg/kg wwt)	<0.020	0.097	0.061	<0.020	<0.020
	Uranium (U)-Total (mg/kg wwt)	0.0220	0.640	0.00061	0.0207	0.0709
	Vanadium (V)-Total (mg/kg wwt)	0.269	2.79	<0.020	0.279	1.12
	Zinc (Zn)-Total (mg/kg wwt)	9.39	10.0	1.05	11.7	12.3
	Zirconium (Zr)-Total (mg/kg wwt)	0.187	1.82	<0.040	0.174	0.782

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1988451-28 Tissue 15-AUG-17 10:15 T2-2-BERRIES	L1988451-30 Tissue 15-AUG-17 10:15 T2-3-SEDGE	L1988451-31 Tissue 15-AUG-17 10:15 T2-3-LICHEN	L1988451-32 Tissue 15-AUG-17 10:15 T2-3-BERRIES	L1988451-34 Tissue 15-AUG-17 10:15 T2-4-SEDGE
Grouping	Analyte					
<b>TISSUE</b>						
<b>Physical Tests</b>	% Moisture (%)	86.9	44.3	29.1	86.1	31.9
<b>Metals</b>	Aluminum (Al)-Total (mg/kg wwt)	5.93	139	1540	2.92	185
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	0.0472	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg wwt)	<0.0040	0.0888	1.31	<0.0040	0.133
	Barium (Ba)-Total (mg/kg wwt)	0.834	16.1	18.9	1.05	15.5
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	0.0171	0.144	<0.0020	0.0116
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	0.0036	0.0452	<0.0020	0.0043
	Boron (B)-Total (mg/kg wwt)	0.72	1.34	0.87	0.59	0.93
	Cadmium (Cd)-Total (mg/kg wwt)	<0.0010	0.0187	0.0675	0.0025	0.0143
	Calcium (Ca)-Total (mg/kg wwt)	168	1060	1210	180	835
	Cesium (Cs)-Total (mg/kg wwt)	0.0055	0.0366	0.161	0.0050	0.0773
	Chromium (Cr)-Total (mg/kg wwt)	0.093	1.48	16.4	0.036	2.27
	Cobalt (Co)-Total (mg/kg wwt)	0.0053	0.164	0.961	<0.0040	0.170
	Copper (Cu)-Total (mg/kg wwt)	0.546	1.15	1.67	0.599	0.923
	Iron (Fe)-Total (mg/kg wwt)	12.0	231	2490	5.62	325
	Lead (Pb)-Total (mg/kg wwt)	0.0055	0.263	3.33	<0.0040	0.253
	Lithium (Li)-Total (mg/kg wwt)	<0.10	0.12	0.79	<0.10	0.15
	Magnesium (Mg)-Total (mg/kg wwt)	72.4	428	1060	66.4	329
	Manganese (Mn)-Total (mg/kg wwt)	5.50	125	93.6	10.2	126
	Mercury (Hg)-Total (mg/kg wwt)	<0.0010	0.0056	0.103	<0.0010	0.0076
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0070	0.800	0.275	0.0145	0.347
	Nickel (Ni)-Total (mg/kg wwt)	0.123	1.27	6.19	0.106	1.56
	Phosphorus (P)-Total (mg/kg wwt)	109	355	188	122	240
	Potassium (K)-Total (mg/kg wwt)	1160	3480	386	988	2580
	Rubidium (Rb)-Total (mg/kg wwt)	5.38	5.67	1.93	3.68	8.73
	Selenium (Se)-Total (mg/kg wwt)	<0.010	0.012	0.126	<0.010	0.014
	Sodium (Na)-Total (mg/kg wwt)	<4.0	11.9	18.2	<4.0	17.6
	Strontium (Sr)-Total (mg/kg wwt)	0.416	5.57	5.73	0.369	4.23
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	<0.00040	0.00260	0.0149	<0.00040	0.00397
	Tin (Sn)-Total (mg/kg wwt)	0.038	<0.020	0.071	0.036	<0.020
	Uranium (U)-Total (mg/kg wwt)	0.00058	0.0446	0.257	<0.00040	0.0331
	Vanadium (V)-Total (mg/kg wwt)	<0.020	0.228	2.37	<0.020	0.313
	Zinc (Zn)-Total (mg/kg wwt)	0.76	10.5	13.4	1.00	11.3
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	0.183	1.28	<0.040	0.215

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1988451-35 Tissue 15-AUG-17 10:15 T2-4-LICHEN	L1988451-36 Tissue 15-AUG-17 10:15 T2-4-BERRIES	L1988451-38 Tissue 15-AUG-17 10:15 T2-5-SEDGE	L1988451-39 Tissue 15-AUG-17 10:15 T2-5-LICHEN	L1988451-40 Tissue 15-AUG-17 10:15 T2-5-BERRIES
Grouping	Analyte					
<b>TISSUE</b>						
<b>Physical Tests</b>	% Moisture (%)	15.2	86.9	47.3	22.6	86.1
<b>Metals</b>	Aluminum (Al)-Total (mg/kg wwt)	458	3.82	129	3080	3.99
	Antimony (Sb)-Total (mg/kg wwt)	0.0071	<0.0020	0.0026	0.0994	<0.0020
	Arsenic (As)-Total (mg/kg wwt)	0.628	0.0049	0.129	2.39	<0.0040
	Barium (Ba)-Total (mg/kg wwt)	11.3	0.608	18.5	45.6	0.951
	Beryllium (Be)-Total (mg/kg wwt)	0.0174	<0.0020	0.0283	0.389	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)	0.0150	<0.0020	0.0026	0.0884	<0.0020
	Boron (B)-Total (mg/kg wwt)	0.42	0.55	1.51	0.99	0.51
	Cadmium (Cd)-Total (mg/kg wwt)	0.0639	0.0019	0.0274	0.115	0.0042
	Calcium (Ca)-Total (mg/kg wwt)	2100	141	1190	2480	114
	Cesium (Cs)-Total (mg/kg wwt)	0.0833	0.0036	0.0340	0.351	0.0049
	Chromium (Cr)-Total (mg/kg wwt)	8.48	0.054	1.69	30.0	0.058
	Cobalt (Co)-Total (mg/kg wwt)	0.388	<0.0040	0.250	1.67	0.0047
	Copper (Cu)-Total (mg/kg wwt)	1.37	0.458	1.91	4.04	0.544
	Iron (Fe)-Total (mg/kg wwt)	1040	7.60	315	4800	8.49
	Lead (Pb)-Total (mg/kg wwt)	0.924	<0.0040	0.269	5.70	<0.0040
	Lithium (Li)-Total (mg/kg wwt)	0.30	<0.10	<0.10	1.78	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	605	56.4	542	1650	58.3
	Manganese (Mn)-Total (mg/kg wwt)	74.9	6.81	132	84.7	8.85
	Mercury (Hg)-Total (mg/kg wwt)	0.0725	<0.0010	0.0054	0.238	<0.0010
	Molybdenum (Mo)-Total (mg/kg wwt)	0.228	0.0079	0.584	0.513	0.0086
	Nickel (Ni)-Total (mg/kg wwt)	3.02	0.085	2.12	11.1	0.092
	Phosphorus (P)-Total (mg/kg wwt)	483	107	323	426	117
	Potassium (K)-Total (mg/kg wwt)	1070	981	2440	569	836
	Rubidium (Rb)-Total (mg/kg wwt)	3.55	3.28	4.22	6.11	3.92
	Selenium (Se)-Total (mg/kg wwt)	0.057	<0.010	0.011	0.181	<0.010
	Sodium (Na)-Total (mg/kg wwt)	27.1	<4.0	7.2	22.7	<4.0
	Strontium (Sr)-Total (mg/kg wwt)	6.39	0.262	7.04	15.4	0.342
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	0.0057	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	0.00777	<0.00040	0.00485	0.0380	<0.00040
	Tin (Sn)-Total (mg/kg wwt)	<0.020	0.030	<0.020	0.102	0.058
	Uranium (U)-Total (mg/kg wwt)	0.0730	<0.00040	0.0545	1.38	<0.00040
	Vanadium (V)-Total (mg/kg wwt)	0.978	<0.020	0.215	3.96	<0.020
	Zinc (Zn)-Total (mg/kg wwt)	16.2	0.67	12.7	15.7	0.73
	Zirconium (Zr)-Total (mg/kg wwt)	0.554	<0.040	0.201	2.28	<0.040

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1988451-42 Tissue 16-AUG-17 12:00 T3-1-SEDGE	L1988451-43 Tissue 16-AUG-17 12:00 T3-1-LICHEN	L1988451-44 Tissue 16-AUG-17 12:00 T3-1-BERRIES	L1988451-46 Tissue 16-AUG-17 12:00 T3-2-SEDGE	L1988451-47 Tissue 16-AUG-17 12:00 T3-2-LICHEN
Grouping	Analyte					
<b>TISSUE</b>						
<b>Physical Tests</b>	% Moisture (%)	47.2	14.8	87.9	45.7	19.5
<b>Metals</b>	Aluminum (Al)-Total (mg/kg wwt)	119	697	6.37	192	546
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	0.0099	<0.0020	0.0021	0.0076
	Arsenic (As)-Total (mg/kg wwt)	0.144	1.35	0.0077	0.371	1.11
	Barium (Ba)-Total (mg/kg wwt)	7.77	6.60	0.529	12.9	10.7
	Beryllium (Be)-Total (mg/kg wwt)	0.0056	0.0330	<0.0020	0.0086	0.0239
	Bismuth (Bi)-Total (mg/kg wwt)	0.0022	0.0476	<0.0020	0.0036	0.0284
	Boron (B)-Total (mg/kg wwt)	0.97	0.51	1.01	1.55	0.72
	Cadmium (Cd)-Total (mg/kg wwt)	0.0081	0.0759	<0.0010	0.0146	0.0542
	Calcium (Ca)-Total (mg/kg wwt)	679	3490	152	915	3250
	Cesium (Cs)-Total (mg/kg wwt)	0.0146	0.204	0.0012	0.0313	0.151
	Chromium (Cr)-Total (mg/kg wwt)	2.72	15.2	0.142	4.25	11.9
	Cobalt (Co)-Total (mg/kg wwt)	0.135	0.630	0.0080	0.241	0.530
	Copper (Cu)-Total (mg/kg wwt)	0.624	1.83	0.874	1.01	1.63
	Iron (Fe)-Total (mg/kg wwt)	227	1670	14.2	420	1250
	Lead (Pb)-Total (mg/kg wwt)	0.149	2.23	0.0054	0.209	1.52
	Lithium (Li)-Total (mg/kg wwt)	<0.10	0.43	<0.10	0.12	0.34
	Magnesium (Mg)-Total (mg/kg wwt)	400	824	79.4	499	717
	Manganese (Mn)-Total (mg/kg wwt)	115	45.5	6.93	154	91.1
	Mercury (Hg)-Total (mg/kg wwt)	0.0050	0.222	<0.0010	0.0083	0.114
	Molybdenum (Mo)-Total (mg/kg wwt)	0.443	0.258	0.0179	0.482	0.238
	Nickel (Ni)-Total (mg/kg wwt)	1.41	5.46	0.135	2.20	4.17
	Phosphorus (P)-Total (mg/kg wwt)	210	302	114	278	435
	Potassium (K)-Total (mg/kg wwt)	3120	1090	1420	2910	1180
	Rubidium (Rb)-Total (mg/kg wwt)	1.95	2.92	2.20	3.74	2.97
	Selenium (Se)-Total (mg/kg wwt)	<0.010	0.094	<0.010	<0.010	0.064
	Sodium (Na)-Total (mg/kg wwt)	17.5	32.0	<4.0	20.9	19.4
	Strontium (Sr)-Total (mg/kg wwt)	3.37	10.0	0.257	4.88	8.09
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	0.00144	0.00832	<0.00040	0.00267	0.0124
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	0.058	<0.020	<0.020
	Uranium (U)-Total (mg/kg wwt)	0.0133	0.117	0.00051	0.0200	0.0947
	Vanadium (V)-Total (mg/kg wwt)	0.254	1.53	<0.020	0.418	1.14
	Zinc (Zn)-Total (mg/kg wwt)	7.59	11.1	1.20	19.7	14.9
	Zirconium (Zr)-Total (mg/kg wwt)	0.139	1.02	<0.040	0.217	0.833

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1988451-48 Tissue 16-AUG-17 12:00 T3-2-BERRIES	L1988451-50 Tissue 16-AUG-17 12:00 T3-3-SEDGE	L1988451-51 Tissue 16-AUG-17 12:00 T3-3-LICHEN	L1988451-52 Tissue 16-AUG-17 12:00 T3-3-BERRIES	L1988451-54 Tissue 16-AUG-17 12:00 T3-4-SEDGE
Grouping	Analyte					
<b>TISSUE</b>						
<b>Physical Tests</b>	% Moisture (%)	87.3	40.5	15.0	86.3	43.8
<b>Metals</b>	Aluminum (Al)-Total (mg/kg wwt)	5.33	257	1740	5.83	224
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	0.0030	0.0194	<0.0020	0.0028
	Arsenic (As)-Total (mg/kg wwt)	0.0049	0.404	3.80	0.0169	0.269
	Barium (Ba)-Total (mg/kg wwt)	0.860	15.1	15.0	1.04	8.58
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	0.0105	0.0527	<0.0020	0.0087
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	0.0059	0.0505	<0.0020	0.0051
	Boron (B)-Total (mg/kg wwt)	1.07	1.83	0.63	0.57	1.08
	Cadmium (Cd)-Total (mg/kg wwt)	0.0021	0.0229	0.0717	<0.0010	0.0099
	Calcium (Ca)-Total (mg/kg wwt)	123	1310	4220	132	899
	Cesium (Cs)-Total (mg/kg wwt)	0.0028	0.0522	0.323	0.0048	0.0323
	Chromium (Cr)-Total (mg/kg wwt)	0.096	6.52	40.8	0.134	5.59
	Cobalt (Co)-Total (mg/kg wwt)	0.0056	0.310	1.62	0.0117	0.235
	Copper (Cu)-Total (mg/kg wwt)	0.657	1.18	3.27	0.634	0.744
	Iron (Fe)-Total (mg/kg wwt)	11.0	561	4730	11.7	456
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	0.409	2.73	0.0067	0.253
	Lithium (Li)-Total (mg/kg wwt)	<0.10	0.22	1.14	<0.10	0.25
	Magnesium (Mg)-Total (mg/kg wwt)	59.6	607	1980	69.0	572
	Manganese (Mn)-Total (mg/kg wwt)	7.84	336	124	11.9	138
	Mercury (Hg)-Total (mg/kg wwt)	<0.0010	0.0091	0.0757	<0.0010	0.0062
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0054	0.424	0.517	0.0104	0.655
	Nickel (Ni)-Total (mg/kg wwt)	0.148	2.51	14.3	0.135	2.67
	Phosphorus (P)-Total (mg/kg wwt)	100	485	526	114	288
	Potassium (K)-Total (mg/kg wwt)	1060	3160	1290	1050	2920
	Rubidium (Rb)-Total (mg/kg wwt)	2.71	4.55	5.06	4.04	3.72
	Selenium (Se)-Total (mg/kg wwt)	<0.010	0.020	0.074	<0.010	0.016
	Sodium (Na)-Total (mg/kg wwt)	<4.0	15.0	82.1	<4.0	25.3
	Strontium (Sr)-Total (mg/kg wwt)	0.250	5.92	11.9	0.372	4.28
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	0.0076	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	<0.00040	0.00525	0.0227	<0.00040	0.00250
	Tin (Sn)-Total (mg/kg wwt)	0.051	<0.020	0.028	0.063	<0.020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	0.0294	0.178	<0.00040	0.0230
	Vanadium (V)-Total (mg/kg wwt)	<0.020	0.578	3.93	<0.020	0.537
	Zinc (Zn)-Total (mg/kg wwt)	1.00	17.2	19.7	0.80	7.46
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	0.276	1.69	<0.040	0.244

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1988451-55 Tissue 16-AUG-17 12:00 T3-4-LICHEN	L1988451-56 Tissue 16-AUG-17 12:00 T3-4-BERRIES	L1988451-58 Tissue 16-AUG-17 12:00 T3-5-SEDGE	L1988451-59 Tissue 16-AUG-17 12:00 T3-5-LICHEN	L1988451-60 Tissue 16-AUG-17 12:00 T3-5-BERRIES
Grouping	Analyte					
<b>TISSUE</b>						
<b>Physical Tests</b>	% Moisture (%)	17.6	88.0	47.1	18.3	85.5
<b>Metals</b>	Aluminum (Al)-Total (mg/kg wwt)	512	5.80	198	774	5.26
	Antimony (Sb)-Total (mg/kg wwt)	0.0086	<0.0020	0.0022	0.0122	<0.0020
	Arsenic (As)-Total (mg/kg wwt)	1.18	0.0068	0.250	1.63	0.0107
	Barium (Ba)-Total (mg/kg wwt)	7.88	0.662	9.67	11.6	0.877
	Beryllium (Be)-Total (mg/kg wwt)	0.0226	<0.0020	0.0099	0.0390	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)	0.0304	<0.0020	0.0061	0.0431	<0.0020
	Boron (B)-Total (mg/kg wwt)	0.62	0.53	1.15	0.63	1.24
	Cadmium (Cd)-Total (mg/kg wwt)	0.108	<0.0010	0.0145	0.0807	0.0045
	Calcium (Ca)-Total (mg/kg wwt)	3660	129	1070	2810	121
	Cesium (Cs)-Total (mg/kg wwt)	0.167	0.0023	0.0316	0.274	0.0026
	Chromium (Cr)-Total (mg/kg wwt)	12.4	0.125	3.92	15.9	0.091
	Cobalt (Co)-Total (mg/kg wwt)	0.534	0.0062	0.211	0.707	0.0074
	Copper (Cu)-Total (mg/kg wwt)	1.69	0.747	1.04	2.10	0.542
	Iron (Fe)-Total (mg/kg wwt)	1220	11.5	388	1840	11.0
	Lead (Pb)-Total (mg/kg wwt)	1.67	0.0041	0.208	1.95	<0.0040
	Lithium (Li)-Total (mg/kg wwt)	0.34	<0.10	0.23	0.55	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	754	72.3	588	931	62.5
	Manganese (Mn)-Total (mg/kg wwt)	90.0	6.89	133	61.5	8.37
	Mercury (Hg)-Total (mg/kg wwt)	0.109	<0.0010	0.0072	0.205	<0.0010
	Molybdenum (Mo)-Total (mg/kg wwt)	0.257	0.0202	0.508	0.273	0.0073
	Nickel (Ni)-Total (mg/kg wwt)	4.51	0.167	2.14	5.80	0.159
	Phosphorus (P)-Total (mg/kg wwt)	439	119	277	364	114
	Potassium (K)-Total (mg/kg wwt)	1250	1190	2730	1120	964
	Rubidium (Rb)-Total (mg/kg wwt)	3.20	2.47	3.18	3.27	2.11
	Selenium (Se)-Total (mg/kg wwt)	0.064	<0.010	0.018	0.097	<0.010
	Sodium (Na)-Total (mg/kg wwt)	32.9	<4.0	22.5	21.6	<4.0
	Strontium (Sr)-Total (mg/kg wwt)	9.21	0.275	4.97	7.90	0.297
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	0.0054	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	0.0135	<0.00040	0.00287	0.00853	<0.00040
	Tin (Sn)-Total (mg/kg wwt)	<0.020	0.049	<0.020	0.025	<0.020
	Uranium (U)-Total (mg/kg wwt)	0.101	0.00045	0.0296	0.139	0.00054
	Vanadium (V)-Total (mg/kg wwt)	1.19	<0.020	0.437	1.64	<0.020
	Zinc (Zn)-Total (mg/kg wwt)	11.8	0.86	10.1	14.7	1.05
	Zirconium (Zr)-Total (mg/kg wwt)	0.804	<0.040	0.218	1.06	<0.040

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1988451-62 Tissue 14-AUG-17 16:45 T4-1-SEDGE	L1988451-63 Tissue 14-AUG-17 16:45 T4-1-LICHEN	L1988451-64 Tissue 14-AUG-17 16:45 T4-1-BERRIES	L1988451-66 Tissue 14-AUG-17 16:45 T4-2-SEDGE	L1988451-67 Tissue 14-AUG-17 16:45 T4-2-LICHEN
Grouping	Analyte					
<b>TISSUE</b>						
<b>Physical Tests</b>	% Moisture (%)	62.4	17.2	87.1	36.9	11.7
<b>Metals</b>	Aluminum (Al)-Total (mg/kg wwt)	361	1080	2.96	78.5	1120
	Antimony (Sb)-Total (mg/kg wwt)	0.0030	0.0151	<0.0020	0.0026	0.0143
	Arsenic (As)-Total (mg/kg wwt)	0.316	2.52	0.0046	0.0978	2.45
	Barium (Ba)-Total (mg/kg wwt)	19.0	10.6	1.12	9.70	8.79
	Beryllium (Be)-Total (mg/kg wwt)	0.0263	0.0249	<0.0020	0.0047	0.0290
	Bismuth (Bi)-Total (mg/kg wwt)	0.0129	0.0248	<0.0020	<0.0020	0.0326
	Boron (B)-Total (mg/kg wwt)	1.97	0.65	1.91	1.42	0.56
	Cadmium (Cd)-Total (mg/kg wwt)	0.0154	0.0408	0.0106	0.0139	0.0541
	Calcium (Ca)-Total (mg/kg wwt)	1090	1320	202	811	2210
	Cesium (Cs)-Total (mg/kg wwt)	0.0371	0.118	0.0021	0.0259	0.212
	Chromium (Cr)-Total (mg/kg wwt)	5.32	27.1	0.042	1.88	28.7
	Cobalt (Co)-Total (mg/kg wwt)	0.342	1.01	<0.0040	0.0972	1.08
	Copper (Cu)-Total (mg/kg wwt)	1.52	2.50	0.521	0.934	2.25
	Iron (Fe)-Total (mg/kg wwt)	665	3210	4.37	159	3160
	Lead (Pb)-Total (mg/kg wwt)	0.265	1.21	<0.0040	0.125	1.95
	Lithium (Li)-Total (mg/kg wwt)	0.25	0.79	<0.10	<0.10	0.72
	Magnesium (Mg)-Total (mg/kg wwt)	611	1140	64.2	361	1250
	Manganese (Mn)-Total (mg/kg wwt)	157	106	25.5	187	94.6
	Mercury (Hg)-Total (mg/kg wwt)	0.0093	0.113	<0.0010	0.0061	0.0770
	Molybdenum (Mo)-Total (mg/kg wwt)	0.862	0.349	0.0192	0.690	0.346
	Nickel (Ni)-Total (mg/kg wwt)	2.52	8.68	0.217	1.54	9.51
	Phosphorus (P)-Total (mg/kg wwt)	299	228	109	210	328
	Potassium (K)-Total (mg/kg wwt)	2110	590	922	3620	911
	Rubidium (Rb)-Total (mg/kg wwt)	1.41	1.38	1.27	4.90	3.76
	Selenium (Se)-Total (mg/kg wwt)	0.016	0.052	<0.010	0.011	0.059
	Sodium (Na)-Total (mg/kg wwt)	9.6	31.3	<4.0	22.9	17.5
	Strontium (Sr)-Total (mg/kg wwt)	6.13	5.20	0.274	3.50	6.45
	Tellurium (Te)-Total (mg/kg wwt)	0.0049	0.0050	<0.0040	<0.0040	0.0062
	Thallium (Tl)-Total (mg/kg wwt)	0.00340	0.00671	<0.00040	0.00190	0.0157
	Tin (Sn)-Total (mg/kg wwt)	<0.020	0.024	0.038	<0.020	0.023
	Uranium (U)-Total (mg/kg wwt)	0.173	0.0952	<0.00040	0.00924	0.114
	Vanadium (V)-Total (mg/kg wwt)	0.573	2.56	<0.020	0.175	2.53
	Zinc (Zn)-Total (mg/kg wwt)	12.1	14.4	1.75	12.7	12.8
	Zirconium (Zr)-Total (mg/kg wwt)	0.308	1.10	<0.040	0.100	1.06

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1988451-68	L1988451-70	L1988451-71	L1988451-72	L1988451-74
		Description	Tissue	Tissue	Tissue	Tissue	Tissue
		Sampled Date	14-AUG-17	14-AUG-17	14-AUG-17	14-AUG-17	14-AUG-17
		Sampled Time	16:45	16:45	16:45	16:45	16:45
		Client ID	T4-2-BERRIES	T4-3-SEDGE	T4-3-LICHEN	T4-3-BERRIES	T4-4-SEDGE
Grouping	Analyte						
<b>TISSUE</b>							
<b>Physical Tests</b>	% Moisture (%)	87.5	38.9	10.3	87.6	23.1	
<b>Metals</b>	Aluminum (Al)-Total (mg/kg wwt)	15.4	70.8	645	3.04	70.3	
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	0.0134	<0.0020	<0.0020	
	Arsenic (As)-Total (mg/kg wwt)	0.0152	0.114	1.41	0.0047	0.0789	
	Barium (Ba)-Total (mg/kg wwt)	1.28	11.1	11.6	0.644	11.2	
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	0.0050	0.0233	<0.0020	0.0048	
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	0.0484	<0.0020	0.0021	
	Boron (B)-Total (mg/kg wwt)	0.80	0.97	0.50	0.55	1.33	
	Cadmium (Cd)-Total (mg/kg wwt)	0.0058	0.0106	0.0486	<0.0010	0.0074	
	Calcium (Ca)-Total (mg/kg wwt)	188	672	2190	175	994	
	Cesium (Cs)-Total (mg/kg wwt)	0.0043	0.0458	0.152	0.0058	0.0118	
	Chromium (Cr)-Total (mg/kg wwt)	0.145	1.68	15.8	0.064	1.73	
	Cobalt (Co)-Total (mg/kg wwt)	0.0122	0.100	0.629	0.0052	0.122	
	Copper (Cu)-Total (mg/kg wwt)	0.795	0.632	1.65	0.726	0.912	
	Iron (Fe)-Total (mg/kg wwt)	29.9	149	1690	6.71	137	
	Lead (Pb)-Total (mg/kg wwt)	0.0112	0.112	1.44	<0.0040	0.139	
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	0.44	<0.10	0.19	
	Magnesium (Mg)-Total (mg/kg wwt)	88.6	321	813	68.9	723	
	Manganese (Mn)-Total (mg/kg wwt)	19.7	139	107	6.44	111	
	Mercury (Hg)-Total (mg/kg wwt)	<0.0010	0.0052	0.0940	<0.0010	0.0080	
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0129	0.319	0.256	0.0120	0.266	
	Nickel (Ni)-Total (mg/kg wwt)	0.209	1.24	5.38	0.141	1.68	
	Phosphorus (P)-Total (mg/kg wwt)	154	228	332	128	395	
	Potassium (K)-Total (mg/kg wwt)	1270	3070	886	1230	5570	
	Rubidium (Rb)-Total (mg/kg wwt)	2.64	7.91	3.38	4.91	3.78	
	Selenium (Se)-Total (mg/kg wwt)	<0.010	<0.010	0.062	<0.010	<0.010	
	Sodium (Na)-Total (mg/kg wwt)	<4.0	15.9	36.4	<4.0	23.2	
	Strontium (Sr)-Total (mg/kg wwt)	0.406	3.75	6.29	0.278	5.07	
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	
	Thallium (Tl)-Total (mg/kg wwt)	<0.00040	0.00237	0.0113	<0.00040	0.00147	
	Tin (Sn)-Total (mg/kg wwt)	0.049	<0.020	<0.020	0.049	<0.020	
	Uranium (U)-Total (mg/kg wwt)	0.00420	0.00638	0.0794	<0.00040	0.00703	
	Vanadium (V)-Total (mg/kg wwt)	0.028	0.160	1.47	<0.020	0.166	
	Zinc (Zn)-Total (mg/kg wwt)	1.40	9.49	14.1	0.89	7.17	
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	0.098	0.688	<0.040	0.072	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1988451-75 Tissue 14-AUG-17 16:45 T4-4-LICHEN	L1988451-76 Tissue 14-AUG-17 16:45 T4-4-BERRIES	L1988451-78 Tissue 14-AUG-17 16:45 T4-5-SEDGE	L1988451-79 Tissue 14-AUG-17 16:45 T4-5-LICHEN	L1988451-80 Tissue 14-AUG-17 16:45 T4-5-BERRIES
Grouping	Analyte					
<b>TISSUE</b>						
<b>Physical Tests</b>	% Moisture (%)	52.7	86.7	44.7	16.8	85.0
<b>Metals</b>	Aluminum (Al)-Total (mg/kg wwt)	283	3.76	136	330	4.91
	Antimony (Sb)-Total (mg/kg wwt)	0.0028	<0.0020	0.0061	0.0052	<0.0020
	Arsenic (As)-Total (mg/kg wwt)	0.462	0.0095	0.157	0.584	0.0112
	Barium (Ba)-Total (mg/kg wwt)	5.04	2.15	16.2	8.64	1.10
	Beryllium (Be)-Total (mg/kg wwt)	0.0091	<0.0020	0.0070	0.0110	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)	0.0105	<0.0020	0.0034	0.0120	<0.0020
	Boron (B)-Total (mg/kg wwt)	0.43	0.92	1.19	0.64	0.76
	Cadmium (Cd)-Total (mg/kg wwt)	0.0884	0.0251	0.0117	0.0316	<0.0010
	Calcium (Ca)-Total (mg/kg wwt)	1970	257	996	1750	196
	Cesium (Cs)-Total (mg/kg wwt)	0.0752	0.0026	0.0343	0.112	0.0043
	Chromium (Cr)-Total (mg/kg wwt)	6.66	0.052	3.18	8.19	0.090
	Cobalt (Co)-Total (mg/kg wwt)	0.315	0.0162	0.146	0.345	0.0065
	Copper (Cu)-Total (mg/kg wwt)	0.842	0.516	0.838	1.13	0.759
	Iron (Fe)-Total (mg/kg wwt)	709	5.67	274	823	9.56
	Lead (Pb)-Total (mg/kg wwt)	0.854	<0.0040	0.185	0.918	0.0041
	Lithium (Li)-Total (mg/kg wwt)	0.20	<0.10	0.10	0.22	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	403	96.5	400	468	79.8
	Manganese (Mn)-Total (mg/kg wwt)	56.3	15.7	189	82.5	9.86
	Mercury (Hg)-Total (mg/kg wwt)	0.0366	<0.0010	0.0072	0.0656	<0.0010
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0905	0.0304	0.429	0.146	0.0102
	Nickel (Ni)-Total (mg/kg wwt)	2.41	0.235	1.88	2.81	0.148
	Phosphorus (P)-Total (mg/kg wwt)	190	161	363	268	112
	Potassium (K)-Total (mg/kg wwt)	621	1220	3140	893	1100
	Rubidium (Rb)-Total (mg/kg wwt)	1.99	2.43	6.97	4.50	4.27
	Selenium (Se)-Total (mg/kg wwt)	0.037	<0.010	0.014	0.044	<0.010
	Sodium (Na)-Total (mg/kg wwt)	17.0	<4.0	18.8	11.7	<4.0
	Strontium (Sr)-Total (mg/kg wwt)	4.35	0.451	4.70	3.68	0.381
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	0.00740	<0.00040	0.00292	0.0176	<0.00040
	Tin (Sn)-Total (mg/kg wwt)	<0.020	0.057	<0.020	<0.020	0.039
	Uranium (U)-Total (mg/kg wwt)	0.0331	<0.00040	0.0120	0.0469	<0.00040
	Vanadium (V)-Total (mg/kg wwt)	0.623	<0.020	0.299	0.752	<0.020
	Zinc (Zn)-Total (mg/kg wwt)	9.74	1.56	10.5	9.50	0.96
	Zirconium (Zr)-Total (mg/kg wwt)	0.329	<0.040	0.114	0.425	<0.040

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1988451-82	L1988451-83	L1988451-84	L1988451-86	L1988451-87
		Description	Tissue	Tissue	Tissue	Tissue	Tissue
		Sampled Date	15-AUG-17	15-AUG-17	15-AUG-17	15-AUG-17	15-AUG-17
		Sampled Time	09:30	09:30	09:30	09:30	09:30
		Client ID	T5-1-SEDGE	T5-1-LICHEN	T5-1-BERRIES	T5-2-SEDGE	T5-2-LICHEN
Grouping	Analyte						
<b>TISSUE</b>							
<b>Physical Tests</b>	% Moisture (%)		50.9	20.9	84.8	55.8	33.0
<b>Metals</b>	Aluminum (Al)-Total (mg/kg wwt)		89.5	1540	2.53	190	537
	Antimony (Sb)-Total (mg/kg wwt)		<0.0020	0.0150	<0.0020	<0.0020	0.0067
	Arsenic (As)-Total (mg/kg wwt)		0.131	1.96	0.0091	0.0931	0.735
	Barium (Ba)-Total (mg/kg wwt)		21.1	25.2	0.933	8.52	13.9
	Beryllium (Be)-Total (mg/kg wwt)		0.0071	0.0481	<0.0020	0.0101	0.0145
	Bismuth (Bi)-Total (mg/kg wwt)		<0.0020	0.0533	<0.0020	0.0060	0.0175
	Boron (B)-Total (mg/kg wwt)		1.75	0.59	0.69	0.78	0.35
	Cadmium (Cd)-Total (mg/kg wwt)		0.0238	0.0780	0.0030	0.0098	0.0527
	Calcium (Ca)-Total (mg/kg wwt)		1030	1640	185	547	1620
	Cesium (Cs)-Total (mg/kg wwt)		0.0364	0.228	0.0058	0.0331	0.0981
	Chromium (Cr)-Total (mg/kg wwt)		1.70	29.5	0.041	1.83	12.7
	Cobalt (Co)-Total (mg/kg wwt)		0.177	1.39	0.0057	0.231	0.535
	Copper (Cu)-Total (mg/kg wwt)		1.35	3.12	0.722	0.703	1.30
	Iron (Fe)-Total (mg/kg wwt)		195	3680	4.78	348	1310
	Lead (Pb)-Total (mg/kg wwt)		0.148	3.11	<0.0040	0.161	0.952
	Lithium (Li)-Total (mg/kg wwt)		<0.10	1.15	<0.10	0.28	0.37
	Magnesium (Mg)-Total (mg/kg wwt)		462	1360	77.9	373	617
	Manganese (Mn)-Total (mg/kg wwt)		196	109	9.66	120	72.7
	Mercury (Hg)-Total (mg/kg wwt)		0.0064	0.113	<0.0010	0.0063	0.0772
	Molybdenum (Mo)-Total (mg/kg wwt)		0.628	0.360	0.0158	0.267	0.157
	Nickel (Ni)-Total (mg/kg wwt)		2.60	10.4	0.218	1.77	4.35
	Phosphorus (P)-Total (mg/kg wwt)		363	313	154	261	309
	Potassium (K)-Total (mg/kg wwt)		3090	593	1220	2170	698
	Rubidium (Rb)-Total (mg/kg wwt)		3.95	3.78	3.06	3.79	2.66
	Selenium (Se)-Total (mg/kg wwt)		0.012	0.083	<0.010	<0.010	0.047
	Sodium (Na)-Total (mg/kg wwt)		13.4	28.5	<4.0	14.5	23.7
	Strontium (Sr)-Total (mg/kg wwt)		6.57	7.22	0.426	3.15	5.03
	Tellurium (Te)-Total (mg/kg wwt)		<0.0040	0.0051	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)		0.00318	0.0275	<0.00040	0.00303	0.00632
	Tin (Sn)-Total (mg/kg wwt)		<0.020	0.049	0.031	<0.020	<0.020
	Uranium (U)-Total (mg/kg wwt)		0.0126	0.177	<0.00040	0.0339	0.0593
	Vanadium (V)-Total (mg/kg wwt)		0.184	3.42	<0.020	0.342	1.25
	Zinc (Zn)-Total (mg/kg wwt)		18.2	15.4	1.03	7.61	13.1
	Zirconium (Zr)-Total (mg/kg wwt)		0.066	1.51	<0.040	0.196	0.554

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1988451-88	L1988451-90	L1988451-91	L1988451-92	L1988451-94
		Description	Tissue	Tissue	Tissue	Tissue	Tissue
		Sampled Date	15-AUG-17	15-AUG-17	15-AUG-17	15-AUG-17	15-AUG-17
		Sampled Time	09:30	09:30	09:30	09:30	09:30
		Client ID	T5-2-BERRIES	T5-3-SEDGE	T5-3-LICHEN	T5-3-BERRIES	T5-4-SEDGE
Grouping	Analyte						
<b>TISSUE</b>							
<b>Physical Tests</b>	% Moisture (%)	85.4	55.6	25.6	86.1	59.7	
<b>Metals</b>	Aluminum (Al)-Total (mg/kg wwt)	1.60	48.6	296	2.37	52.9	
	Antimony (Sb)-Total (mg/kg wwt)	0.0033	<0.0020	0.0043	<0.0020	<0.0020	
	Arsenic (As)-Total (mg/kg wwt)	<0.0040	0.0552	0.456	0.0046	0.0692	
	Barium (Ba)-Total (mg/kg wwt)	0.882	8.47	12.7	0.869	6.45	
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	0.0036	0.0103	<0.0020	0.0030	
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	0.0133	<0.0020	<0.0020	
	Boron (B)-Total (mg/kg wwt)	0.61	0.58	0.37	0.63	0.70	
	Cadmium (Cd)-Total (mg/kg wwt)	0.0032	0.0080	0.0451	0.0039	0.0155	
	Calcium (Ca)-Total (mg/kg wwt)	132	487	2030	135	653	
	Cesium (Cs)-Total (mg/kg wwt)	0.0045	0.0210	0.0926	0.0026	0.0107	
	Chromium (Cr)-Total (mg/kg wwt)	0.023	1.00	6.57	0.046	1.09	
	Cobalt (Co)-Total (mg/kg wwt)	0.0100	0.0990	0.335	0.0057	0.0952	
	Copper (Cu)-Total (mg/kg wwt)	0.616	0.717	1.09	0.570	0.513	
	Iron (Fe)-Total (mg/kg wwt)	5.20	96.4	672	5.47	108	
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	0.0794	0.720	<0.0040	0.0770	
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	0.20	<0.10	<0.10	
	Magnesium (Mg)-Total (mg/kg wwt)	65.9	231	425	63.8	256	
	Manganese (Mn)-Total (mg/kg wwt)	6.04	115	89.3	7.92	94.0	
	Mercury (Hg)-Total (mg/kg wwt)	<0.0010	0.0040	0.0670	<0.0010	0.0039	
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0128	0.271	0.103	0.0149	0.185	
	Nickel (Ni)-Total (mg/kg wwt)	0.171	1.22	2.34	0.169	1.36	
	Phosphorus (P)-Total (mg/kg wwt)	125	206	331	127	168	
	Potassium (K)-Total (mg/kg wwt)	1100	2250	966	1140	1800	
	Rubidium (Rb)-Total (mg/kg wwt)	3.04	4.50	3.67	2.72	2.42	
	Selenium (Se)-Total (mg/kg wwt)	<0.010	<0.010	0.051	<0.010	<0.010	
	Sodium (Na)-Total (mg/kg wwt)	<4.0	11.2	29.3	<4.0	13.2	
	Strontium (Sr)-Total (mg/kg wwt)	0.307	2.41	4.75	0.330	3.17	
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	
	Thallium (Tl)-Total (mg/kg wwt)	<0.00040	0.00160	0.00745	<0.00040	0.00103	
	Tin (Sn)-Total (mg/kg wwt)	0.055	<0.020	<0.020	0.062	<0.020	
	Uranium (U)-Total (mg/kg wwt)	<0.00040	0.00497	0.0424	<0.00040	0.0107	
	Vanadium (V)-Total (mg/kg wwt)	<0.020	0.104	0.659	<0.020	0.115	
	Zinc (Zn)-Total (mg/kg wwt)	0.98	8.24	14.9	0.76	6.81	
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	0.043	0.374	<0.040	0.058	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1988451-95	L1988451-96	L1988451-98	L1988451-99	L1988451-100
		Description	Tissue	Tissue	Tissue	Tissue	Tissue
		Sampled Date	15-AUG-17	15-AUG-17	15-AUG-17	15-AUG-17	15-AUG-17
		Sampled Time	09:30	09:30	09:30	09:30	09:30
		Client ID	T5-4-LICHEN	T5-4-BERRIES	T5-5-SEDGE	T5-5-LICHEN	T5-5-BERRIES
Grouping	Analyte						
<b>TISSUE</b>							
<b>Physical Tests</b>	% Moisture (%)		27.4	87.1	38.9	14.0	80.5
<b>Metals</b>	Aluminum (Al)-Total (mg/kg wwt)		1400	1.79	146	2880	6.86
	Antimony (Sb)-Total (mg/kg wwt)		0.0163	<0.0020	<0.0020	0.0358	<0.0020
	Arsenic (As)-Total (mg/kg wwt)		2.42	<0.0040	0.174	7.68	0.0110
	Barium (Ba)-Total (mg/kg wwt)		26.5	1.45	15.9	31.5	1.03
	Beryllium (Be)-Total (mg/kg wwt)		0.0342	<0.0020	0.0089	0.0729	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)		0.0305	<0.0020	0.0037	0.0800	<0.0020
	Boron (B)-Total (mg/kg wwt)		1.02	1.38	0.93	1.01	0.76
	Cadmium (Cd)-Total (mg/kg wwt)		0.147	0.0264	0.0141	0.0802	<0.0010
	Calcium (Ca)-Total (mg/kg wwt)		2660	211	887	2770	111
	Cesium (Cs)-Total (mg/kg wwt)		0.209	0.0032	0.104	0.419	0.0040
	Chromium (Cr)-Total (mg/kg wwt)		30.8	<0.010	2.95	72.3	0.140
	Cobalt (Co)-Total (mg/kg wwt)		1.28	<0.0040	0.148	2.58	0.0075
	Copper (Cu)-Total (mg/kg wwt)		3.66	0.518	1.06	5.96	0.758
	Iron (Fe)-Total (mg/kg wwt)		3550	2.35	288	9100	15.1
	Lead (Pb)-Total (mg/kg wwt)		1.73	<0.0040	0.277	4.22	0.0099
	Lithium (Li)-Total (mg/kg wwt)		0.93	<0.10	<0.10	1.88	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)		1660	84.9	400	2820	71.8
	Manganese (Mn)-Total (mg/kg wwt)		177	18.5	139	168	6.98
	Mercury (Hg)-Total (mg/kg wwt)		0.0779	<0.0010	0.0076	0.123	<0.0010
	Molybdenum (Mo)-Total (mg/kg wwt)		0.441	0.0154	0.424	0.647	0.0102
	Nickel (Ni)-Total (mg/kg wwt)		11.1	0.316	1.83	24.1	0.126
	Phosphorus (P)-Total (mg/kg wwt)		577	152	289	465	118
	Potassium (K)-Total (mg/kg wwt)		1050	909	2690	935	1110
	Rubidium (Rb)-Total (mg/kg wwt)		3.75	2.07	9.94	7.29	4.51
	Selenium (Se)-Total (mg/kg wwt)		0.073	<0.010	<0.010	0.113	<0.010
	Sodium (Na)-Total (mg/kg wwt)		71.2	<4.0	13.2	32.8	<4.0
	Strontium (Sr)-Total (mg/kg wwt)		7.85	0.385	4.38	9.26	0.329
	Tellurium (Te)-Total (mg/kg wwt)		<0.0040	<0.0040	<0.0040	0.0160	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)		0.00918	<0.00040	0.00351	0.0467	<0.00040
	Tin (Sn)-Total (mg/kg wwt)		0.028	0.034	<0.020	0.058	0.037
	Uranium (U)-Total (mg/kg wwt)		0.161	<0.00040	0.0132	0.209	0.00057
	Vanadium (V)-Total (mg/kg wwt)		3.00	<0.020	0.283	6.46	<0.020
	Zinc (Zn)-Total (mg/kg wwt)		32.2	2.24	12.1	20.3	0.92
	Zirconium (Zr)-Total (mg/kg wwt)		1.10	<0.040	0.948	2.38	<0.040

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1988451-102 Tissue 15-AUG-17 08:00 T6-1-SEDGE	L1988451-103 Tissue 15-AUG-17 08:00 T6-1-LICHEN	L1988451-104 Tissue 15-AUG-17 08:00 T6-1-BERRIES	L1988451-106 Tissue 15-AUG-17 08:00 T6-2-SEDGE	L1988451-107 Tissue 15-AUG-17 08:00 T6-2-LICHEN
Grouping	Analyte					
<b>TISSUE</b>						
<b>Physical Tests</b>	% Moisture (%)	48.9	20.5	85.6	43.8	20.0
<b>Metals</b>	Aluminum (Al)-Total (mg/kg wwt)	151	2880	3.97	210	2680
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	0.0302	<0.0020	0.0031	0.0303
	Arsenic (As)-Total (mg/kg wwt)	0.231	4.53	0.0099	0.325	4.77
	Barium (Ba)-Total (mg/kg wwt)	27.4	24.4	0.969	32.7	23.4
	Beryllium (Be)-Total (mg/kg wwt)	0.0040	0.0636	<0.0020	0.0056	0.0598
	Bismuth (Bi)-Total (mg/kg wwt)	0.0030	0.0607	<0.0020	0.0042	0.0692
	Boron (B)-Total (mg/kg wwt)	1.90	1.75	1.05	3.15	1.96
	Cadmium (Cd)-Total (mg/kg wwt)	0.0245	0.137	0.0081	0.0286	0.0958
	Calcium (Ca)-Total (mg/kg wwt)	1370	3000	174	1710	3290
	Cesium (Cs)-Total (mg/kg wwt)	0.0295	0.317	0.0015	0.0355	0.334
	Chromium (Cr)-Total (mg/kg wwt)	4.17	74.5	0.097	5.82	75.5
	Cobalt (Co)-Total (mg/kg wwt)	0.204	2.87	0.0070	0.289	2.95
	Copper (Cu)-Total (mg/kg wwt)	2.55	6.08	0.734	2.77	5.99
	Iron (Fe)-Total (mg/kg wwt)	319	7090	7.57	469	6790
	Lead (Pb)-Total (mg/kg wwt)	0.234	2.03	<0.0040	0.285	2.17
	Lithium (Li)-Total (mg/kg wwt)	<0.10	1.98	<0.10	0.17	1.76
	Magnesium (Mg)-Total (mg/kg wwt)	874	3210	86.4	760	3250
	Manganese (Mn)-Total (mg/kg wwt)	293	248	17.7	212	227
	Mercury (Hg)-Total (mg/kg wwt)	0.0035	0.104	<0.0010	0.0085	0.138
	Molybdenum (Mo)-Total (mg/kg wwt)	0.910	0.672	0.0173	0.953	0.643
	Nickel (Ni)-Total (mg/kg wwt)	2.93	26.8	0.207	4.44	26.9
	Phosphorus (P)-Total (mg/kg wwt)	418	331	150	525	367
	Potassium (K)-Total (mg/kg wwt)	3640	697	1220	3310	818
	Rubidium (Rb)-Total (mg/kg wwt)	2.12	3.00	1.15	1.95	2.35
	Selenium (Se)-Total (mg/kg wwt)	0.010	0.073	<0.010	0.013	0.075
	Sodium (Na)-Total (mg/kg wwt)	7.0	18.3	<4.0	8.6	24.1
	Strontium (Sr)-Total (mg/kg wwt)	7.61	13.1	0.312	8.82	11.8
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	0.0072	<0.0040	<0.0040	0.0083
	Thallium (Tl)-Total (mg/kg wwt)	0.00217	0.0155	<0.00040	0.00191	0.0219
	Tin (Sn)-Total (mg/kg wwt)	<0.020	0.045	0.022	<0.020	0.044
	Uranium (U)-Total (mg/kg wwt)	0.0175	0.306	<0.00040	0.0207	0.222
	Vanadium (V)-Total (mg/kg wwt)	0.360	6.91	<0.020	0.518	6.68
	Zinc (Zn)-Total (mg/kg wwt)	13.8	21.7	1.65	18.4	22.3
	Zirconium (Zr)-Total (mg/kg wwt)	0.123	2.45	<0.040	0.119	2.08

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1988451-108 Tissue 15-AUG-17 08:00 T6-2-BERRIES	L1988451-110 Tissue 15-AUG-17 08:00 T6-3-SEDGE	L1988451-111 Tissue 15-AUG-17 08:00 T6-3-LICHEN	L1988451-112 Tissue 15-AUG-17 08:00 T6-3-BERRIES	L1988451-114 Tissue 15-AUG-17 08:00 T6-4-SEDGE
Grouping	Analyte					
<b>TISSUE</b>						
<b>Physical Tests</b>	% Moisture (%)	86.3	42.8	19.5	87.3	59.1
<b>Metals</b>	Aluminum (Al)-Total (mg/kg wwt)	8.05	208	2630	4.37	177
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	0.0043	0.0055	<0.0020	0.0036
	Arsenic (As)-Total (mg/kg wwt)	0.0139	0.348	3.65	0.0078	0.150
	Barium (Ba)-Total (mg/kg wwt)	0.968	18.3	22.7	0.881	4.18
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	0.0051	0.0783	<0.0020	0.0062
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	0.0043	0.0809	<0.0020	0.0051
	Boron (B)-Total (mg/kg wwt)	1.02	2.17	0.35	0.68	1.93
	Cadmium (Cd)-Total (mg/kg wwt)	0.0039	0.0294	0.0995	0.0070	0.0204
	Calcium (Ca)-Total (mg/kg wwt)	125	1760	2970	158	957
	Cesium (Cs)-Total (mg/kg wwt)	0.0017	0.0264	0.334	0.0018	0.0251
	Chromium (Cr)-Total (mg/kg wwt)	0.195	5.40	54.6	0.095	3.76
	Cobalt (Co)-Total (mg/kg wwt)	0.0107	0.311	2.53	0.0066	0.216
	Copper (Cu)-Total (mg/kg wwt)	0.788	2.90	4.25	0.689	1.75
	Iron (Fe)-Total (mg/kg wwt)	15.1	491	5550	8.41	343
	Lead (Pb)-Total (mg/kg wwt)	0.0061	0.319	2.96	<0.0040	0.185
	Lithium (Li)-Total (mg/kg wwt)	<0.10	0.17	2.17	<0.10	0.21
	Magnesium (Mg)-Total (mg/kg wwt)	78.2	534	2580	70.3	559
	Manganese (Mn)-Total (mg/kg wwt)	12.3	267	137	8.91	68.6
	Mercury (Hg)-Total (mg/kg wwt)	<0.0010	0.0093	0.0690	<0.0010	0.0077
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0159	0.694	0.533	0.0170	0.181
	Nickel (Ni)-Total (mg/kg wwt)	0.237	2.68	19.8	0.200	1.94
	Phosphorus (P)-Total (mg/kg wwt)	132	416	281	127	712
	Potassium (K)-Total (mg/kg wwt)	1160	2460	751	1190	2680
	Rubidium (Rb)-Total (mg/kg wwt)	1.30	1.21	3.77	2.01	2.00
	Selenium (Se)-Total (mg/kg wwt)	<0.010	0.017	0.079	<0.010	<0.010
	Sodium (Na)-Total (mg/kg wwt)	<4.0	7.4	61.6	<4.0	12.1
	Strontium (Sr)-Total (mg/kg wwt)	0.240	6.01	12.0	0.273	3.30
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	0.0069	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	<0.00040	0.00207	0.0152	<0.00040	0.00160
	Tin (Sn)-Total (mg/kg wwt)	0.050	<0.020	0.059	0.035	<0.020
	Uranium (U)-Total (mg/kg wwt)	0.00153	0.0271	0.334	0.00056	0.0385
	Vanadium (V)-Total (mg/kg wwt)	<0.020	0.509	5.84	<0.020	0.410
	Zinc (Zn)-Total (mg/kg wwt)	1.10	15.0	17.3	1.10	11.3
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	0.154	2.37	<0.040	0.087

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1988451-115	L1988451-116	L1988451-118	L1988451-119	L1988451-120
		Description	Tissue	Tissue	Tissue	Tissue	Tissue
		Sampled Date	15-AUG-17	15-AUG-17	15-AUG-17	15-AUG-17	15-AUG-17
		Sampled Time	08:00	08:00	08:00	08:00	08:00
		Client ID	T6-4-LICHEN	T6-4-BERRIES	T6-5-SEDGE	T6-5-LICHEN	T6-5-BERRIES
Grouping	Analyte						
<b>TISSUE</b>							
<b>Physical Tests</b>	% Moisture (%)		14.3	82.9	45.9	18.5	81.6
<b>Metals</b>	Aluminum (Al)-Total (mg/kg wwt)		6100	5.07	276	2680	11.3
	Antimony (Sb)-Total (mg/kg wwt)		0.0263	<0.0020	0.0045	0.0447	<0.0020
	Arsenic (As)-Total (mg/kg wwt)		5.25	0.0115	0.349	4.40	0.0201
	Barium (Ba)-Total (mg/kg wwt)		21.8	1.05	18.2	17.9	0.989
	Beryllium (Be)-Total (mg/kg wwt)		0.189	<0.0020	0.0086	0.0548	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)		0.236	<0.0020	0.0052	0.0583	<0.0020
	Boron (B)-Total (mg/kg wwt)		2.15	0.70	2.23	1.92	0.73
	Cadmium (Cd)-Total (mg/kg wwt)		0.151	0.0012	0.0310	0.125	0.0108
	Calcium (Ca)-Total (mg/kg wwt)		2350	179	1780	2970	156
	Cesium (Cs)-Total (mg/kg wwt)		0.924	0.0041	0.0580	0.260	0.0055
	Chromium (Cr)-Total (mg/kg wwt)		61.3	0.118	6.39	75.1	0.165
	Cobalt (Co)-Total (mg/kg wwt)		3.66	0.0099	0.358	2.98	0.0253
	Copper (Cu)-Total (mg/kg wwt)		7.61	0.663	2.36	5.48	0.678
	Iron (Fe)-Total (mg/kg wwt)		10200	10.4	602	5950	19.9
	Lead (Pb)-Total (mg/kg wwt)		4.03	0.0060	0.360	2.12	0.0101
	Lithium (Li)-Total (mg/kg wwt)		5.51	<0.10	0.21	1.88	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)		3850	80.2	880	3320	74.2
	Manganese (Mn)-Total (mg/kg wwt)		113	6.12	163	247	12.4
	Mercury (Hg)-Total (mg/kg wwt)		0.139	<0.0010	0.0085	0.0965	<0.0010
	Molybdenum (Mo)-Total (mg/kg wwt)		0.620	0.0061	1.07	0.642	0.0143
	Nickel (Ni)-Total (mg/kg wwt)		23.2	0.193	4.31	26.9	0.259
	Phosphorus (P)-Total (mg/kg wwt)		1140	145	406	328	135
	Potassium (K)-Total (mg/kg wwt)		1420	1170	3650	697	892
	Rubidium (Rb)-Total (mg/kg wwt)		18.1	3.32	4.09	2.00	1.47
	Selenium (Se)-Total (mg/kg wwt)		0.141	<0.010	0.017	0.077	<0.010
	Sodium (Na)-Total (mg/kg wwt)		48.0	<4.0	8.0	25.3	<4.0
	Strontium (Sr)-Total (mg/kg wwt)		11.1	0.429	7.73	10.7	0.289
	Tellurium (Te)-Total (mg/kg wwt)		0.0101	<0.0040	0.0043	0.0089	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)		0.0668	<0.00040	0.00218	0.0146	<0.00040
	Tin (Sn)-Total (mg/kg wwt)		0.054	0.040	<0.020	0.041	0.049
	Uranium (U)-Total (mg/kg wwt)		1.06	0.00040	0.0433	0.278	0.00615
	Vanadium (V)-Total (mg/kg wwt)		11.6	<0.020	0.623	6.44	0.025
	Zinc (Zn)-Total (mg/kg wwt)		23.2	1.01	15.8	18.8	1.68
	Zirconium (Zr)-Total (mg/kg wwt)		1.81	<0.040	0.300	1.99	<0.040

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1988451-122	L1988451-123	L1988451-124	L1988451-126	L1988451-127
		Description	Tissue	Tissue	Tissue	Tissue	Tissue
		Sampled Date	15-AUG-17	15-AUG-17	15-AUG-17	15-AUG-17	15-AUG-17
		Sampled Time	18:30	18:30	18:30	18:30	18:30
		Client ID	T7-1-SEDGE	T7-1-LICHEN	T7-1-BERRIES	T7-2-SEDGE	T7-2-LICHEN
Grouping	Analyte						
<b>TISSUE</b>							
<b>Physical Tests</b>	% Moisture (%)		44.4	14.6	84.9	43.1	15.8
<b>Metals</b>	Aluminum (Al)-Total (mg/kg wwt)		304	3200	10.3	635	1550
	Antimony (Sb)-Total (mg/kg wwt)		0.0031	0.0341	<0.0020	0.0082	0.0150
	Arsenic (As)-Total (mg/kg wwt)		0.282	4.23	0.0267	0.731	1.42
	Barium (Ba)-Total (mg/kg wwt)		9.53	26.1	0.689	14.5	13.7
	Beryllium (Be)-Total (mg/kg wwt)		0.0087	0.0786	<0.0020	0.0188	0.0359
	Bismuth (Bi)-Total (mg/kg wwt)		0.0055	0.0697	<0.0020	0.0110	0.0434
	Boron (B)-Total (mg/kg wwt)		1.41	1.35	0.66	1.69	1.06
	Cadmium (Cd)-Total (mg/kg wwt)		0.0761	0.166	0.0016	0.0361	0.0536
	Calcium (Ca)-Total (mg/kg wwt)		1280	3270	82.5	1510	2710
	Cesium (Cs)-Total (mg/kg wwt)		0.0343	0.292	0.0042	0.0656	0.179
	Chromium (Cr)-Total (mg/kg wwt)		2.49	31.1	0.086	4.93	15.4
	Cobalt (Co)-Total (mg/kg wwt)		0.334	3.02	0.0239	0.649	1.27
	Copper (Cu)-Total (mg/kg wwt)		1.29	6.84	0.612	1.75	2.94
	Iron (Fe)-Total (mg/kg wwt)		557	6200	21.3	1200	2840
	Lead (Pb)-Total (mg/kg wwt)		0.363	5.83	0.0066	0.998	2.19
	Lithium (Li)-Total (mg/kg wwt)		0.26	2.71	<0.10	0.65	1.23
	Magnesium (Mg)-Total (mg/kg wwt)		612	2700	61.1	783	1370
	Manganese (Mn)-Total (mg/kg wwt)		188	146	3.31	166	102
	Mercury (Hg)-Total (mg/kg wwt)		0.0064	0.202	<0.0010	0.0124	0.0900
	Molybdenum (Mo)-Total (mg/kg wwt)		0.533	1.26	0.0105	0.733	0.700
	Nickel (Ni)-Total (mg/kg wwt)		3.18	13.3	0.214	3.99	6.29
	Phosphorus (P)-Total (mg/kg wwt)		400	414	127	395	301
	Potassium (K)-Total (mg/kg wwt)		3580	808	1010	2920	905
	Rubidium (Rb)-Total (mg/kg wwt)		5.20	3.75	2.88	3.53	3.59
	Selenium (Se)-Total (mg/kg wwt)		0.011	0.114	<0.010	0.017	0.071
	Sodium (Na)-Total (mg/kg wwt)		19.2	34.7	<4.0	22.7	33.0
	Strontium (Sr)-Total (mg/kg wwt)		6.33	14.6	0.374	7.91	12.4
	Tellurium (Te)-Total (mg/kg wwt)		<0.0040	0.0080	<0.0040	<0.0040	0.0048
	Thallium (Tl)-Total (mg/kg wwt)		0.00326	0.0230	<0.00040	0.00511	0.0208
	Tin (Sn)-Total (mg/kg wwt)		<0.020	0.075	0.035	0.034	0.035
	Uranium (U)-Total (mg/kg wwt)		0.0317	0.322	0.00063	0.0651	0.161
	Vanadium (V)-Total (mg/kg wwt)		0.514	5.94	<0.020	1.13	2.90
	Zinc (Zn)-Total (mg/kg wwt)		20.6	24.1	1.00	19.3	12.7
	Zirconium (Zr)-Total (mg/kg wwt)		0.479	3.34	<0.040	0.959	2.06

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1988451-128	L1988451-130	L1988451-131	L1988451-132	L1988451-134
		Description	Tissue	Tissue	Tissue	Tissue	Tissue
		Sampled Date	15-AUG-17	15-AUG-17	15-AUG-17	15-AUG-17	15-AUG-17
		Sampled Time	18:30	18:30	18:30	18:30	18:30
		Client ID	T7-2-BERRIES	T7-3-SEDGE	T7-3-LICHEN	T7-3-BERRIES	T7-4-SEDGE
Grouping	Analyte						
<b>TISSUE</b>							
<b>Physical Tests</b>	% Moisture (%)		86.9	49.3	16.3	88.6	37.8
<b>Metals</b>	Aluminum (Al)-Total (mg/kg wwt)		12.9	441	1010	14.0	733
	Antimony (Sb)-Total (mg/kg wwt)		<0.0020	0.0051	0.0144	<0.0020	0.0080
	Arsenic (As)-Total (mg/kg wwt)		0.0121	0.400	1.06	0.0204	0.743
	Barium (Ba)-Total (mg/kg wwt)		0.690	10.4	15.0	0.626	12.8
	Beryllium (Be)-Total (mg/kg wwt)		<0.0020	0.0111	0.0311	<0.0020	0.0150
	Bismuth (Bi)-Total (mg/kg wwt)		<0.0020	0.0057	0.0345	<0.0020	0.0134
	Boron (B)-Total (mg/kg wwt)		0.78	1.23	1.22	0.90	1.51
	Cadmium (Cd)-Total (mg/kg wwt)		<0.0010	0.0185	0.122	<0.0010	0.0439
	Calcium (Ca)-Total (mg/kg wwt)		109	1310	5200	101	1560
	Cesium (Cs)-Total (mg/kg wwt)		0.0041	0.0359	0.152	0.0021	0.0714
	Chromium (Cr)-Total (mg/kg wwt)		0.111	4.03	10.1	0.129	6.55
	Cobalt (Co)-Total (mg/kg wwt)		0.0120	0.442	0.908	0.0136	0.673
	Copper (Cu)-Total (mg/kg wwt)		0.643	1.25	2.37	0.636	2.28
	Iron (Fe)-Total (mg/kg wwt)		24.5	856	1940	27.6	1430
	Lead (Pb)-Total (mg/kg wwt)		0.0137	0.379	2.52	0.0104	1.07
	Lithium (Li)-Total (mg/kg wwt)		<0.10	0.45	0.82	<0.10	0.67
	Magnesium (Mg)-Total (mg/kg wwt)		67.7	725	1030	60.2	857
	Manganese (Mn)-Total (mg/kg wwt)		5.45	98.9	132	5.63	152
	Mercury (Hg)-Total (mg/kg wwt)		<0.0010	0.0064	0.0814	<0.0010	0.0094
	Molybdenum (Mo)-Total (mg/kg wwt)		0.0129	0.890	0.694	0.0155	0.666
	Nickel (Ni)-Total (mg/kg wwt)		0.221	3.39	4.40	0.188	3.72
	Phosphorus (P)-Total (mg/kg wwt)		121	409	467	102	343
	Potassium (K)-Total (mg/kg wwt)		1030	3570	1300	1080	3360
	Rubidium (Rb)-Total (mg/kg wwt)		3.09	2.58	3.61	1.73	4.85
	Selenium (Se)-Total (mg/kg wwt)		<0.010	0.013	0.070	<0.010	0.020
	Sodium (Na)-Total (mg/kg wwt)		<4.0	12.4	38.4	<4.0	13.1
	Strontium (Sr)-Total (mg/kg wwt)		0.307	6.53	15.2	0.210	7.39
	Tellurium (Te)-Total (mg/kg wwt)		<0.0040	<0.0040	0.0047	<0.0040	0.0040
	Thallium (Tl)-Total (mg/kg wwt)		<0.00040	0.00289	0.0154	<0.00040	0.00589
	Tin (Sn)-Total (mg/kg wwt)		<0.020	<0.020	0.028	0.031	0.021
	Uranium (U)-Total (mg/kg wwt)		0.00101	0.0416	0.184	0.00110	0.0729
	Vanadium (V)-Total (mg/kg wwt)		0.022	0.810	1.89	0.026	1.34
	Zinc (Zn)-Total (mg/kg wwt)		0.75	10.8	17.9	0.66	12.7
	Zirconium (Zr)-Total (mg/kg wwt)		<0.040	0.695	2.16	<0.040	1.12

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1988451-135	L1988451-136	L1988451-138	L1988451-139	L1988451-140
		Description	Tissue	Tissue	Tissue	Tissue	Tissue
		Sampled Date	15-AUG-17	15-AUG-17	15-AUG-17	15-AUG-17	15-AUG-17
		Sampled Time	18:30	18:30	18:30	18:30	18:30
		Client ID	T7-4-LICHEN	T7-4-BERRIES	T7-5-SEDGE	T7-5-LICHEN	T7-5-BERRIES
Grouping	Analyte						
<b>TISSUE</b>							
<b>Physical Tests</b>	% Moisture (%)		12.4	86.6	46.0	14.1	87.5
<b>Metals</b>	Aluminum (Al)-Total (mg/kg wwt)		388	10.8	363	916	12.2
	Antimony (Sb)-Total (mg/kg wwt)		0.0073	<0.0020	0.0034	0.0177	<0.0020
	Arsenic (As)-Total (mg/kg wwt)		0.566	0.0117	0.353	0.912	0.0152
	Barium (Ba)-Total (mg/kg wwt)		7.08	0.576	8.58	16.8	0.974
	Beryllium (Be)-Total (mg/kg wwt)		0.0146	<0.0020	0.0080	0.0326	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)		0.0208	<0.0020	0.0051	0.0965	<0.0020
	Boron (B)-Total (mg/kg wwt)		0.50	0.91	1.32	0.93	0.91
	Cadmium (Cd)-Total (mg/kg wwt)		0.112	<0.0010	0.0209	0.0665	0.0040
	Calcium (Ca)-Total (mg/kg wwt)		4700	106	930	3350	131
	Cesium (Cs)-Total (mg/kg wwt)		0.122	0.0037	0.0444	0.186	0.0064
	Chromium (Cr)-Total (mg/kg wwt)		4.21	0.101	3.39	9.59	0.108
	Cobalt (Co)-Total (mg/kg wwt)		0.353	0.0100	0.322	0.658	0.0135
	Copper (Cu)-Total (mg/kg wwt)		1.09	0.592	1.01	2.34	0.621
	Iron (Fe)-Total (mg/kg wwt)		684	21.4	690	1640	23.6
	Lead (Pb)-Total (mg/kg wwt)		1.80	0.0071	0.345	2.32	0.0078
	Lithium (Li)-Total (mg/kg wwt)		0.30	<0.10	0.31	0.74	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)		508	60.3	591	867	70.0
	Manganese (Mn)-Total (mg/kg wwt)		61.2	6.10	160	82.0	6.91
	Mercury (Hg)-Total (mg/kg wwt)		0.0837	<0.0010	0.0061	0.126	<0.0010
	Molybdenum (Mo)-Total (mg/kg wwt)		0.325	0.0085	0.654	0.495	0.0140
	Nickel (Ni)-Total (mg/kg wwt)		1.87	0.156	2.42	3.99	0.172
	Phosphorus (P)-Total (mg/kg wwt)		304	111	393	424	138
	Potassium (K)-Total (mg/kg wwt)		1070	937	3370	1070	1040
	Rubidium (Rb)-Total (mg/kg wwt)		3.62	2.93	4.63	4.23	3.76
	Selenium (Se)-Total (mg/kg wwt)		0.067	<0.010	<0.010	0.090	<0.010
	Sodium (Na)-Total (mg/kg wwt)		35.0	<4.0	28.6	37.2	<4.0
	Strontium (Sr)-Total (mg/kg wwt)		14.1	0.229	5.30	12.7	0.394
	Tellurium (Te)-Total (mg/kg wwt)		<0.0040	<0.0040	<0.0040	0.0052	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)		0.00982	<0.00040	0.00329	0.0165	<0.00040
	Tin (Sn)-Total (mg/kg wwt)		<0.020	<0.020	<0.020	0.039	0.036
	Uranium (U)-Total (mg/kg wwt)		0.0593	0.00088	0.0327	0.185	0.00093
	Vanadium (V)-Total (mg/kg wwt)		0.761	<0.020	0.652	1.71	0.020
	Zinc (Zn)-Total (mg/kg wwt)		11.5	0.79	11.5	16.5	0.91
	Zirconium (Zr)-Total (mg/kg wwt)		0.855	<0.040	0.603	1.35	<0.040

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1988451-142	L1988451-143	L1988451-144	L1988451-146	L1988451-147
		Description	Tissue	Tissue	Tissue	Tissue	Tissue
		Sampled Date	18-AUG-17	18-AUG-17	18-AUG-17	18-AUG-17	18-AUG-17
		Sampled Time	15:00	15:00	15:00	15:00	15:00
		Client ID	T8-1-SEDGE	T8-1-LICHEN	T8-1-BERRIES	T8-2-SEDGE	T8-2-LICHEN
Grouping	Analyte						
<b>TISSUE</b>							
<b>Physical Tests</b>	% Moisture (%)		45.4	9.55	86.1	37.1	9.83
<b>Metals</b>	Aluminum (Al)-Total (mg/kg wwt)		907	6060	16.3	1020	4490
	Antimony (Sb)-Total (mg/kg wwt)		0.0037	0.0615	<0.0020	0.0093	0.0227
	Arsenic (As)-Total (mg/kg wwt)		0.602	3.52	0.0198	0.456	1.91
	Barium (Ba)-Total (mg/kg wwt)		30.9	54.4	1.29	22.2	49.5
	Beryllium (Be)-Total (mg/kg wwt)		0.0134	0.115	<0.0020	0.0237	0.0756
	Bismuth (Bi)-Total (mg/kg wwt)		0.0124	0.0828	<0.0020	0.0125	0.0679
	Boron (B)-Total (mg/kg wwt)		2.20	3.48	0.78	2.06	2.41
	Cadmium (Cd)-Total (mg/kg wwt)		0.0206	0.243	0.0170	0.0630	0.156
	Calcium (Ca)-Total (mg/kg wwt)		2010	6780	163	2180	8860
	Cesium (Cs)-Total (mg/kg wwt)		0.0620	0.323	0.0022	0.0614	0.261
	Chromium (Cr)-Total (mg/kg wwt)		8.48	48.2	0.145	9.31	37.7
	Cobalt (Co)-Total (mg/kg wwt)		1.06	5.65	0.0156	0.932	3.45
	Copper (Cu)-Total (mg/kg wwt)		2.85	10.5	0.540	2.52	6.88
	Iron (Fe)-Total (mg/kg wwt)		1610	10600	28.0	1670	6840
	Lead (Pb)-Total (mg/kg wwt)		0.126	4.34	0.0075	0.207	1.47
	Lithium (Li)-Total (mg/kg wwt)		0.96	6.21	<0.10	0.99	3.92
	Magnesium (Mg)-Total (mg/kg wwt)		1400	6060	90.1	1640	4360
	Manganese (Mn)-Total (mg/kg wwt)		150	724	17.4	467	224
	Mercury (Hg)-Total (mg/kg wwt)		0.0056	0.137	<0.0010	0.0092	0.0433
	Molybdenum (Mo)-Total (mg/kg wwt)		0.505	0.487	0.0153	0.410	0.361
	Nickel (Ni)-Total (mg/kg wwt)		4.56	21.8	0.333	5.39	15.4
	Phosphorus (P)-Total (mg/kg wwt)		474	842	107	425	892
	Potassium (K)-Total (mg/kg wwt)		3350	1100	968	3640	2150
	Rubidium (Rb)-Total (mg/kg wwt)		2.83	5.39	1.58	3.57	5.76
	Selenium (Se)-Total (mg/kg wwt)		0.017	0.160	<0.010	0.017	0.060
	Sodium (Na)-Total (mg/kg wwt)		6.8	23.6	<4.0	11.1	107
	Strontium (Sr)-Total (mg/kg wwt)		12.8	36.8	0.488	12.2	41.0
	Tellurium (Te)-Total (mg/kg wwt)		<0.0040	0.0095	<0.0040	<0.0040	<0.0080 <sup>DLA</sup>
	Thallium (Tl)-Total (mg/kg wwt)		0.00210	0.0309	<0.00040	0.00402	0.0163 <sup>DLA</sup>
	Tin (Sn)-Total (mg/kg wwt)		0.025	0.099	0.037	<0.020	<0.040
	Uranium (U)-Total (mg/kg wwt)		0.0693	0.844	0.00246	0.102	0.467
	Vanadium (V)-Total (mg/kg wwt)		1.82	11.6	0.030	2.06	7.91
	Zinc (Zn)-Total (mg/kg wwt)		13.0	46.0	1.89	22.7	36.6
	Zirconium (Zr)-Total (mg/kg wwt)		0.874	5.62	<0.040	0.895	3.68

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID Description Sampled Date Sampled Time Client ID	L1988451-148 Tissue 18-AUG-17 15:00 T8-2-BERRIES	L1988451-150 Tissue 18-AUG-17 15:00 T8-3-SEDGE	L1988451-151 Tissue 18-AUG-17 15:00 T8-3-LICHEN	L1988451-152 Tissue 18-AUG-17 15:00 T8-3-BERRIES	L1988451-154 Tissue 18-AUG-17 15:00 T8-4-SEDGE
Grouping	Analyte						
<b>TISSUE</b>							
<b>Physical Tests</b>	% Moisture (%)	88.3	46.0	13.5	87.7	38.0	
<b>Metals</b>	Aluminum (Al)-Total (mg/kg wwt)	9.19	186	3000	8.82	288	
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	0.0249	<0.0020	0.0056	
	Arsenic (As)-Total (mg/kg wwt)	0.0049	0.0825	1.32	<0.0040	0.118	
	Barium (Ba)-Total (mg/kg wwt)	1.28	27.2	40.7	0.432	24.2	
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	0.0056	0.0948	<0.0020	0.0172	
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	0.0552	<0.0020	0.0054	
	Boron (B)-Total (mg/kg wwt)	0.65	1.77	1.86	0.22	3.10	
	Cadmium (Cd)-Total (mg/kg wwt)	0.0156	0.0059	0.0794	<0.0010	0.0301	
	Calcium (Ca)-Total (mg/kg wwt)	138	1310	4340	57.2	2370	
	Cesium (Cs)-Total (mg/kg wwt)	0.0020	0.0788	0.244	0.0021	0.0323	
	Chromium (Cr)-Total (mg/kg wwt)	0.070	1.97	24.6	0.076	2.61	
	Cobalt (Co)-Total (mg/kg wwt)	0.0102	0.195	2.49	0.0085	0.364	
	Copper (Cu)-Total (mg/kg wwt)	0.479	2.26	6.33	0.324	3.76	
	Iron (Fe)-Total (mg/kg wwt)	15.8	326	4910	15.8	527	
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	0.0444	4.18	<0.0040	0.188	
	Lithium (Li)-Total (mg/kg wwt)	<0.10	0.17	2.66	<0.10	0.26	
	Magnesium (Mg)-Total (mg/kg wwt)	78.5	719	2800	35.7	1010	
	Manganese (Mn)-Total (mg/kg wwt)	11.1	131	158	2.27	167	
	Mercury (Hg)-Total (mg/kg wwt)	<0.0010	0.0035	0.127	<0.0010	0.0079	
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0154	0.386	0.211	<0.0040	2.15	
	Nickel (Ni)-Total (mg/kg wwt)	0.222	1.73	10.5	0.088	2.95	
	Phosphorus (P)-Total (mg/kg wwt)	138	382	518	54.2	295	
	Potassium (K)-Total (mg/kg wwt)	923	3530	1170	509	2860	
	Rubidium (Rb)-Total (mg/kg wwt)	1.69	5.92	4.73	1.89	2.17	
	Selenium (Se)-Total (mg/kg wwt)	<0.010	0.013	0.109	<0.010	0.017	
	Sodium (Na)-Total (mg/kg wwt)	<4.0	4.4	57.0	<4.0	11.0	
	Strontium (Sr)-Total (mg/kg wwt)	0.427	10.3	20.5	0.242	15.4	
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0080 <sup>DLA</sup>	<0.0040	<0.0040	
	Thallium (Tl)-Total (mg/kg wwt)	<0.00040	0.00185	0.0267	<0.00040	0.00184	
	Tin (Sn)-Total (mg/kg wwt)	0.026	<0.020	0.059	<0.020	<0.020	
	Uranium (U)-Total (mg/kg wwt)	0.00042	0.0161	0.334	0.00056	0.0797	
	Vanadium (V)-Total (mg/kg wwt)	<0.020	0.386	5.55	<0.020	0.562	
	Zinc (Zn)-Total (mg/kg wwt)	1.77	16.4	20.5	0.41	19.1	
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	0.183	2.65	<0.040	0.445	

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1988451-155 Tissue 18-AUG-17 15:00 T8-4-LICHEN	L1988451-156 Tissue 18-AUG-17 15:00 T8-4-BERRIES	L1988451-158 Tissue 18-AUG-17 15:00 T8-5-SEDGE	L1988451-159 Tissue 18-AUG-17 15:00 T8-5-LICHEN	L1988451-160 Tissue 18-AUG-17 15:00 T8-5-BERRIES
Grouping	Analyte					
<b>TISSUE</b>						
<b>Physical Tests</b>	% Moisture (%)	14.6	85.3	42.0	15.5	84.8
<b>Metals</b>	Aluminum (Al)-Total (mg/kg wwt)	2490	6.48	301	3840	11.9
	Antimony (Sb)-Total (mg/kg wwt)	0.0299	<0.0020	0.0021	0.0343	<0.0020
	Arsenic (As)-Total (mg/kg wwt)	1.37	<0.0040	0.122	1.81	0.0063
	Barium (Ba)-Total (mg/kg wwt)	35.0	1.22	30.5	44.5	1.27
	Beryllium (Be)-Total (mg/kg wwt)	0.0644	<0.0020	0.0073	0.0824	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)	0.0376	<0.0020	0.0066	0.0536	<0.0020
	Boron (B)-Total (mg/kg wwt)	2.17	1.20	3.08	3.33	1.18
	Cadmium (Cd)-Total (mg/kg wwt)	0.187	0.0196	0.0261	0.138	0.0178
	Calcium (Ca)-Total (mg/kg wwt)	4440	174	2100	6260	197
	Cesium (Cs)-Total (mg/kg wwt)	0.110	0.0027	0.0269	0.198	0.0016
	Chromium (Cr)-Total (mg/kg wwt)	21.6	0.050	3.06	36.5	0.093
	Cobalt (Co)-Total (mg/kg wwt)	2.37	0.0076	0.291	3.32	0.0100
	Copper (Cu)-Total (mg/kg wwt)	6.34	0.596	2.40	6.24	0.724
	Iron (Fe)-Total (mg/kg wwt)	3910	10.8	542	6500	20.4
	Lead (Pb)-Total (mg/kg wwt)	1.56	<0.0040	0.0875	1.62	<0.0040
	Lithium (Li)-Total (mg/kg wwt)	2.14	<0.10	0.30	4.06	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	3310	75.6	1080	4940	98.0
	Manganese (Mn)-Total (mg/kg wwt)	571	40.5	243	395	32.6
	Mercury (Hg)-Total (mg/kg wwt)	0.101	<0.0010	0.0060	0.0874	<0.0010
	Molybdenum (Mo)-Total (mg/kg wwt)	0.327	0.0304	1.03	0.472	0.0324
	Nickel (Ni)-Total (mg/kg wwt)	10.7	0.247	2.46	15.6	0.386
	Phosphorus (P)-Total (mg/kg wwt)	475	105	449	612	142
	Potassium (K)-Total (mg/kg wwt)	910	1010	4010	1170	1100
	Rubidium (Rb)-Total (mg/kg wwt)	2.13	1.74	1.92	2.94	1.28
	Selenium (Se)-Total (mg/kg wwt)	0.079	<0.010	0.011	0.076	<0.010
	Sodium (Na)-Total (mg/kg wwt)	25.2	<4.0	7.8	30.4	<4.0
	Strontium (Sr)-Total (mg/kg wwt)	24.2	0.381	13.4	31.1	0.418
	Tellurium (Te)-Total (mg/kg wwt)	0.0046	<0.0040	<0.0040	0.0053	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	0.0112	<0.00040	0.00122	0.0143	<0.00040
	Tin (Sn)-Total (mg/kg wwt)	0.031	0.023	<0.020	0.031	0.026
	Uranium (U)-Total (mg/kg wwt)	0.585	0.00083	0.0463	0.521	0.00090
	Vanadium (V)-Total (mg/kg wwt)	4.74	<0.020	0.613	7.83	0.023
	Zinc (Zn)-Total (mg/kg wwt)	43.7	2.01	23.4	45.4	2.81
	Zirconium (Zr)-Total (mg/kg wwt)	2.53	<0.040	0.277	3.72	<0.040

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1988451-162 Tissue 21-AUG-17 16:00 C1-1-SEDGE	L1988451-163 Tissue 21-AUG-17 16:00 C1-1-LICHEN	L1988451-164 Tissue 21-AUG-17 16:00 C1-1-BERRIES	L1988451-166 Tissue 21-AUG-17 16:00 C1-2-SEDGE	L1988451-167 Tissue 21-AUG-17 16:00 C1-2-LICHEN
Grouping	Analyte					
<b>TISSUE</b>						
<b>Physical Tests</b>	% Moisture (%)	24.7	6.72	88.7	36.1	7.26
<b>Metals</b>	Aluminum (Al)-Total (mg/kg wwt)	35.8	214	0.68	24.7	208
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	0.0052	<0.0020	<0.0020	0.0072
	Arsenic (As)-Total (mg/kg wwt)	0.0322	0.313	<0.0040	0.0228	0.126
	Barium (Ba)-Total (mg/kg wwt)	15.8	12.0	0.902	15.7	9.28
	Beryllium (Be)-Total (mg/kg wwt)	0.0058	0.0140	<0.0020	0.0035	0.0175
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	0.0092	<0.0020	<0.0020	0.0119
	Boron (B)-Total (mg/kg wwt)	2.02	0.47	0.40	2.16	0.29
	Cadmium (Cd)-Total (mg/kg wwt)	0.0110	0.0575	<0.0010	0.0297	0.0984
	Calcium (Ca)-Total (mg/kg wwt)	1260	1220	94.2	993	1950
	Cesium (Cs)-Total (mg/kg wwt)	0.0284	0.0656	0.0040	0.0109	0.0807
	Chromium (Cr)-Total (mg/kg wwt)	0.429	2.42	<0.010	0.305	1.65
	Cobalt (Co)-Total (mg/kg wwt)	0.0846	0.256	0.0051	0.170	0.177
	Copper (Cu)-Total (mg/kg wwt)	1.24	1.01	0.497	1.30	0.791
	Iron (Fe)-Total (mg/kg wwt)	73.4	384	1.70	49.2	368
	Lead (Pb)-Total (mg/kg wwt)	0.143	0.823	<0.0040	0.0937	1.82
	Lithium (Li)-Total (mg/kg wwt)	<0.10	0.15	<0.10	<0.10	0.13
	Magnesium (Mg)-Total (mg/kg wwt)	495	496	54.2	422	308
	Manganese (Mn)-Total (mg/kg wwt)	220	50.0	4.81	433	27.4
	Mercury (Hg)-Total (mg/kg wwt)	0.0117	0.130	<0.0010	0.0090	0.104
	Molybdenum (Mo)-Total (mg/kg wwt)	0.522	0.0654	<0.0040	0.316	0.0444
	Nickel (Ni)-Total (mg/kg wwt)	0.875	2.04	0.134	0.803	0.935
	Phosphorus (P)-Total (mg/kg wwt)	257	373	113	302	224
	Potassium (K)-Total (mg/kg wwt)	3220	1150	919	2300	893
	Rubidium (Rb)-Total (mg/kg wwt)	4.11	4.56	4.05	3.27	3.30
	Selenium (Se)-Total (mg/kg wwt)	0.021	0.091	<0.010	0.016	0.089
	Sodium (Na)-Total (mg/kg wwt)	19.5	69.1	<4.0	11.5	49.5
	Strontium (Sr)-Total (mg/kg wwt)	7.35	5.55	0.598	4.91	8.12
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	0.00217	0.00808	<0.00040	0.00437	0.00716
	Tin (Sn)-Total (mg/kg wwt)	<0.020	<0.020	0.028	<0.020	0.020
	Uranium (U)-Total (mg/kg wwt)	0.00995	0.0387	<0.00040	0.00412	0.0452
	Vanadium (V)-Total (mg/kg wwt)	0.070	0.428	<0.020	0.049	0.395
	Zinc (Zn)-Total (mg/kg wwt)	15.5	13.2	0.58	22.3	11.6
	Zirconium (Zr)-Total (mg/kg wwt)	0.047	0.231	<0.040	<0.040	0.263

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1988451-168 Tissue 21-AUG-17 16:00 C1-2-BERRIES	L1988451-170 Tissue 21-AUG-17 16:00 C1-3-SEDGE	L1988451-171 Tissue 21-AUG-17 16:00 C1-3-LICHEN	L1988451-172 Tissue 21-AUG-17 16:00 C1-3-BERRIES	L1988451-174 Tissue 21-AUG-17 16:00 C1-4-SEDGE
Grouping	Analyte					
<b>TISSUE</b>						
<b>Physical Tests</b>	% Moisture (%)	89.5	35.3	8.19	91.2	42.7
<b>Metals</b>	Aluminum (Al)-Total (mg/kg wwt)	0.62	53.6	57.5	0.85	15.1
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	0.0042	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg wwt)	<0.0040	0.0285	0.0995	<0.0040	0.0149
	Barium (Ba)-Total (mg/kg wwt)	0.763	14.8	4.75	0.715	11.8
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	0.0059	0.0073	<0.0020	0.0031
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	0.0041	<0.0020	<0.0020
	Boron (B)-Total (mg/kg wwt)	0.35	1.29	0.25	0.35	1.37
	Cadmium (Cd)-Total (mg/kg wwt)	0.0011	0.0094	0.0479	<0.0010	0.0166
	Calcium (Ca)-Total (mg/kg wwt)	96.8	786	636	95.3	564
	Cesium (Cs)-Total (mg/kg wwt)	0.0035	0.0591	0.0606	0.0046	0.0254
	Chromium (Cr)-Total (mg/kg wwt)	<0.010	0.422	0.443	<0.010	0.140
	Cobalt (Co)-Total (mg/kg wwt)	<0.0040	0.136	0.0681	<0.0040	0.0991
	Copper (Cu)-Total (mg/kg wwt)	0.377	0.743	0.580	0.474	0.953
	Iron (Fe)-Total (mg/kg wwt)	1.41	87.2	82.6	1.74	29.1
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	0.0765	0.693	<0.0040	0.0323
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	43.5	317	165	43.9	312
	Manganese (Mn)-Total (mg/kg wwt)	3.04	143	23.6	3.65	97.0
	Mercury (Hg)-Total (mg/kg wwt)	<0.0010	0.0063	0.102	<0.0010	0.0044
	Molybdenum (Mo)-Total (mg/kg wwt)	<0.0040	0.246	0.0252	0.0069	0.224
	Nickel (Ni)-Total (mg/kg wwt)	0.099	1.53	0.306	0.116	0.805
	Phosphorus (P)-Total (mg/kg wwt)	84.8	344	164	92.0	203
	Potassium (K)-Total (mg/kg wwt)	806	3110	733	753	2640
	Rubidium (Rb)-Total (mg/kg wwt)	2.83	7.96	3.63	3.92	4.78
	Selenium (Se)-Total (mg/kg wwt)	<0.010	0.011	0.066	<0.010	0.011
	Sodium (Na)-Total (mg/kg wwt)	<4.0	22.9	31.0	<4.0	23.4
	Strontium (Sr)-Total (mg/kg wwt)	0.363	4.83	2.34	0.502	3.70
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	<0.00040	0.00460	0.00453	<0.00040	0.00114
	Tin (Sn)-Total (mg/kg wwt)	0.039	<0.020	<0.020	0.027	<0.020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	0.00979	0.0165	<0.00040	0.00252
	Vanadium (V)-Total (mg/kg wwt)	<0.020	0.104	0.114	<0.020	0.027
	Zinc (Zn)-Total (mg/kg wwt)	0.62	9.94	7.75	0.53	18.0
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	0.078	0.090	<0.040	<0.040

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1988451-175 Tissue 21-AUG-17 16:00 C1-4-LICHEN	L1988451-176 Tissue 21-AUG-17 16:00 C1-4-BERRIES	L1988451-178 Tissue 21-AUG-17 16:00 C1-5-SEDGE	L1988451-179 Tissue 21-AUG-17 16:00 C1-5-LICHEN	L1988451-180 Tissue 21-AUG-17 16:00 C1-5-BERRIES
Grouping	Analyte					
<b>TISSUE</b>						
<b>Physical Tests</b>	% Moisture (%)	8.20	92.1	33.4	8.63	91.5
<b>Metals</b>	Aluminum (Al)-Total (mg/kg wwt)	165	0.68	35.5	61.9	0.80
	Antimony (Sb)-Total (mg/kg wwt)	0.0058	<0.0020	<0.0020	0.0029	<0.0020
	Arsenic (As)-Total (mg/kg wwt)	0.154	<0.0040	0.0163	0.0877	<0.0040
	Barium (Ba)-Total (mg/kg wwt)	8.19	0.598	15.7	4.62	0.514
	Beryllium (Be)-Total (mg/kg wwt)	0.0118	<0.0020	0.0056	0.0042	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)	0.0092	<0.0020	<0.0020	0.0027	<0.0020
	Boron (B)-Total (mg/kg wwt)	0.45	0.38	1.13	0.27	0.34
	Cadmium (Cd)-Total (mg/kg wwt)	0.0671	<0.0010	0.0116	0.0312	<0.0010
	Calcium (Ca)-Total (mg/kg wwt)	1100	107	702	566	104
	Cesium (Cs)-Total (mg/kg wwt)	0.0633	0.0035	0.0304	0.0223	0.0042
	Chromium (Cr)-Total (mg/kg wwt)	1.35	<0.010	0.330	0.626	<0.010
	Cobalt (Co)-Total (mg/kg wwt)	0.183	<0.0040	0.0773	0.0815	<0.0040
	Copper (Cu)-Total (mg/kg wwt)	1.02	0.455	0.775	0.564	0.474
	Iron (Fe)-Total (mg/kg wwt)	266	1.39	61.6	98.6	1.49
	Lead (Pb)-Total (mg/kg wwt)	0.684	<0.0040	0.112	0.392	<0.0040
	Lithium (Li)-Total (mg/kg wwt)	0.19	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	297	45.3	295	174	43.9
	Manganese (Mn)-Total (mg/kg wwt)	66.2	5.52	146	37.4	6.93
	Mercury (Hg)-Total (mg/kg wwt)	0.0772	<0.0010	0.0070	0.0715	<0.0010
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0851	0.0082	0.124	0.0259	0.0072
	Nickel (Ni)-Total (mg/kg wwt)	0.963	0.090	0.911	0.414	0.075
	Phosphorus (P)-Total (mg/kg wwt)	331	89.5	322	240	84.5
	Potassium (K)-Total (mg/kg wwt)	1050	755	3580	791	803
	Rubidium (Rb)-Total (mg/kg wwt)	3.85	2.68	6.32	1.40	2.62
	Selenium (Se)-Total (mg/kg wwt)	0.074	<0.010	0.011	0.050	<0.010
	Sodium (Na)-Total (mg/kg wwt)	44.2	<4.0	9.2	18.9	<4.0
	Strontium (Sr)-Total (mg/kg wwt)	4.35	0.316	4.83	1.89	0.192
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	0.00843	<0.00040	0.00298	0.00282	<0.00040
	Tin (Sn)-Total (mg/kg wwt)	0.022	0.023	<0.020	<0.020	0.036
	Uranium (U)-Total (mg/kg wwt)	0.0618	<0.00040	0.00731	0.0132	<0.00040
	Vanadium (V)-Total (mg/kg wwt)	0.329	<0.020	0.053	0.133	<0.020
	Zinc (Zn)-Total (mg/kg wwt)	14.6	0.57	16.7	7.76	0.51
	Zirconium (Zr)-Total (mg/kg wwt)	0.283	<0.040	0.044	0.083	<0.040

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1988451-182 Tissue 21-AUG-17 11:00 C2-1-SEDGE	L1988451-183 Tissue 21-AUG-17 11:00 C2-1-LICHEN	L1988451-184 Tissue 21-AUG-17 11:00 C2-1-BERRIES	L1988451-186 Tissue 21-AUG-17 11:00 C2-2-SEDGE	L1988451-187 Tissue 21-AUG-17 11:00 C2-2-LICHEN
Grouping	Analyte					
<b>TISSUE</b>						
<b>Physical Tests</b>	% Moisture (%)	36.1	9.55	86.4	37.9	9.75
<b>Metals</b>	Aluminum (Al)-Total (mg/kg wwt)	38.4	775	1.13	42.4	118
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	0.0164	<0.0020	<0.0020	0.0036
	Arsenic (As)-Total (mg/kg wwt)	0.0317	0.645	<0.0040	0.0394	0.142
	Barium (Ba)-Total (mg/kg wwt)	12.7	18.3	0.925	9.31	2.10
	Beryllium (Be)-Total (mg/kg wwt)	0.0027	0.0260	<0.0020	0.0026	0.0064
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	0.0308	<0.0020	<0.0020	0.0091
	Boron (B)-Total (mg/kg wwt)	0.99	0.67	0.44	1.07	<0.20
	Cadmium (Cd)-Total (mg/kg wwt)	0.0183	0.104	0.0029	0.0136	0.0779
	Calcium (Ca)-Total (mg/kg wwt)	844	1570	137	732	400
	Cesium (Cs)-Total (mg/kg wwt)	0.0481	0.143	0.0029	0.0149	0.0608
	Chromium (Cr)-Total (mg/kg wwt)	0.509	7.86	0.010	0.614	1.18
	Cobalt (Co)-Total (mg/kg wwt)	0.177	0.616	0.0074	0.122	0.136
	Copper (Cu)-Total (mg/kg wwt)	0.883	1.90	0.447	1.31	0.610
	Iron (Fe)-Total (mg/kg wwt)	74.4	1390	2.15	81.4	204
	Lead (Pb)-Total (mg/kg wwt)	0.0631	2.80	<0.0040	0.0606	0.888
	Lithium (Li)-Total (mg/kg wwt)	<0.10	0.42	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	416	719	63.2	410	206
	Manganese (Mn)-Total (mg/kg wwt)	168	82.9	9.32	86.2	10.1
	Mercury (Hg)-Total (mg/kg wwt)	0.0076	0.105	<0.0010	0.0069	0.111
	Molybdenum (Mo)-Total (mg/kg wwt)	0.275	0.142	0.0049	0.238	0.0255
	Nickel (Ni)-Total (mg/kg wwt)	2.10	4.32	0.220	1.74	0.871
	Phosphorus (P)-Total (mg/kg wwt)	333	324	134	278	173
	Potassium (K)-Total (mg/kg wwt)	2460	865	967	2710	623
	Rubidium (Rb)-Total (mg/kg wwt)	5.86	4.29	2.75	3.65	1.70
	Selenium (Se)-Total (mg/kg wwt)	<0.010	0.105	<0.010	0.012	0.070
	Sodium (Na)-Total (mg/kg wwt)	13.1	83.0	<4.0	19.0	44.8
	Strontium (Sr)-Total (mg/kg wwt)	3.70	5.92	0.262	3.36	1.61
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	0.00290	0.0137	<0.00040	0.00103	0.00331
	Tin (Sn)-Total (mg/kg wwt)	<0.020	0.048	<0.020	<0.020	<0.020
	Uranium (U)-Total (mg/kg wwt)	0.00394	0.0892	<0.00040	0.00642	0.0121
	Vanadium (V)-Total (mg/kg wwt)	0.078	1.56	<0.020	0.094	0.228
	Zinc (Zn)-Total (mg/kg wwt)	12.9	15.0	0.92	9.22	6.39
	Zirconium (Zr)-Total (mg/kg wwt)	0.048	0.627	<0.040	0.062	0.108

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1988451-188 Tissue 21-AUG-17 11:00 C2-2-BERRIES	L1988451-190 Tissue 21-AUG-17 11:00 C2-3-SEDGE	L1988451-191 Tissue 21-AUG-17 11:00 C2-3-LICHEN	L1988451-192 Tissue 21-AUG-17 11:00 C2-3-BERRIES	L1988451-194 Tissue 21-AUG-17 11:00 C2-4-SEDGE
Grouping	Analyte					
<b>TISSUE</b>						
<b>Physical Tests</b>	% Moisture (%)	86.3	36.0	9.94	88.0	45.1
<b>Metals</b>	Aluminum (Al)-Total (mg/kg wwt)	1.95	43.1	326	1.08	34.0
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	0.0103	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg wwt)	<0.0040	0.0335	0.303	<0.0040	0.0484
	Barium (Ba)-Total (mg/kg wwt)	0.890	16.7	5.86	0.667	8.52
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	0.0029	0.0124	<0.0020	0.0025
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	0.0035	0.0599	<0.0020	<0.0020
	Boron (B)-Total (mg/kg wwt)	0.52	2.18	0.52	0.84	1.14
	Cadmium (Cd)-Total (mg/kg wwt)	0.0094	0.0392	0.127	<0.0010	0.0352
	Calcium (Ca)-Total (mg/kg wwt)	122	1430	875	103	880
	Cesium (Cs)-Total (mg/kg wwt)	0.0042	0.0460	0.0921	0.0157	0.0877
	Chromium (Cr)-Total (mg/kg wwt)	0.024	0.520	3.08	0.015	0.599
	Cobalt (Co)-Total (mg/kg wwt)	0.0082	0.0765	0.225	<0.0040	0.193
	Copper (Cu)-Total (mg/kg wwt)	0.567	0.997	1.07	0.659	1.48
	Iron (Fe)-Total (mg/kg wwt)	3.01	76.2	575	2.35	77.9
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	0.0735	2.97	<0.0040	0.0727
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	0.17	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	64.6	424	375	51.9	480
	Manganese (Mn)-Total (mg/kg wwt)	7.09	143	25.1	4.19	91.8
	Mercury (Hg)-Total (mg/kg wwt)	<0.0010	0.0106	0.264	<0.0010	0.0045
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0113	0.216	0.0638	0.0079	0.342
	Nickel (Ni)-Total (mg/kg wwt)	0.260	1.03	1.50	0.076	2.27
	Phosphorus (P)-Total (mg/kg wwt)	130	339	268	95.0	628
	Potassium (K)-Total (mg/kg wwt)	856	2360	836	940	3620
	Rubidium (Rb)-Total (mg/kg wwt)	2.39	3.82	2.75	3.46	11.5
	Selenium (Se)-Total (mg/kg wwt)	<0.010	0.014	0.140	<0.010	<0.010
	Sodium (Na)-Total (mg/kg wwt)	<4.0	26.6	74.9	<4.0	13.2
	Strontium (Sr)-Total (mg/kg wwt)	0.298	6.67	3.20	0.195	3.42
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	<0.00040	0.00359	0.00687	<0.00040	0.00520
	Tin (Sn)-Total (mg/kg wwt)	0.030	<0.020	0.050	0.041	<0.020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	0.00370	0.0335	<0.00040	0.00386
	Vanadium (V)-Total (mg/kg wwt)	<0.020	0.082	0.643	<0.020	0.074
	Zinc (Zn)-Total (mg/kg wwt)	0.90	43.9	11.5	0.87	15.4
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	0.050	0.298	<0.040	0.092

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1988451-195 Tissue 21-AUG-17 11:00 C2-4-LICHEN	L1988451-196 Tissue 21-AUG-17 11:00 C2-4-BERRIES	L1988451-198 Tissue 21-AUG-17 11:00 C2-5-SEDGE	L1988451-199 Tissue 21-AUG-17 11:00 C2-5-LICHEN	L1988451-200 Tissue 21-AUG-17 11:00 C2-5-BERRIES
Grouping	Analyte					
<b>TISSUE</b>						
<b>Physical Tests</b>	% Moisture (%)	9.85	86.8	41.6	9.52	88.3
<b>Metals</b>	Aluminum (Al)-Total (mg/kg wwt)	695	1.63	51.4	80.8	1.09
	Antimony (Sb)-Total (mg/kg wwt)	0.0117	<0.0020	<0.0020	0.0031	<0.0020
	Arsenic (As)-Total (mg/kg wwt)	0.807	<0.0040	0.0489	0.162	<0.0040
	Barium (Ba)-Total (mg/kg wwt)	7.03	1.09	8.44	9.32	0.601
	Beryllium (Be)-Total (mg/kg wwt)	0.0194	<0.0020	0.0026	0.0070	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)	0.0238	<0.0020	<0.0020	0.0060	<0.0020
	Boron (B)-Total (mg/kg wwt)	0.40	0.72	1.07	0.41	0.69
	Cadmium (Cd)-Total (mg/kg wwt)	0.0815	0.0051	0.0087	0.0740	<0.0010
	Calcium (Ca)-Total (mg/kg wwt)	1320	132	809	3180	85.6
	Cesium (Cs)-Total (mg/kg wwt)	0.163	0.0094	0.0548	0.0339	0.0040
	Chromium (Cr)-Total (mg/kg wwt)	11.2	0.016	0.905	0.904	0.017
	Cobalt (Co)-Total (mg/kg wwt)	0.554	0.0068	0.0858	0.154	<0.0040
	Copper (Cu)-Total (mg/kg wwt)	1.68	0.531	0.641	0.806	0.504
	Iron (Fe)-Total (mg/kg wwt)	1510	2.66	99.0	142	2.49
	Lead (Pb)-Total (mg/kg wwt)	1.22	<0.0040	0.0656	0.627	<0.0040
	Lithium (Li)-Total (mg/kg wwt)	0.47	<0.10	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	829	67.9	372	303	47.4
	Manganese (Mn)-Total (mg/kg wwt)	48.2	8.51	115	61.7	3.30
	Mercury (Hg)-Total (mg/kg wwt)	0.0640	<0.0010	0.0070	0.107	<0.0010
	Molybdenum (Mo)-Total (mg/kg wwt)	0.205	0.0077	0.371	0.0436	<0.0040
	Nickel (Ni)-Total (mg/kg wwt)	4.48	0.278	1.91	0.891	0.142
	Phosphorus (P)-Total (mg/kg wwt)	318	125	294	263	82.5
	Potassium (K)-Total (mg/kg wwt)	1070	919	2640	1040	919
	Rubidium (Rb)-Total (mg/kg wwt)	4.20	3.74	6.01	3.62	3.53
	Selenium (Se)-Total (mg/kg wwt)	0.069	<0.010	0.014	0.079	<0.010
	Sodium (Na)-Total (mg/kg wwt)	93.1	<4.0	32.0	42.3	<4.0
	Strontium (Sr)-Total (mg/kg wwt)	4.91	0.277	2.96	6.66	0.144
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	0.00839	<0.00040	0.00126	0.00410	<0.00040
	Tin (Sn)-Total (mg/kg wwt)	0.028	0.023	<0.020	<0.020	0.050
	Uranium (U)-Total (mg/kg wwt)	0.0537	<0.00040	0.00450	0.0116	<0.00040
	Vanadium (V)-Total (mg/kg wwt)	1.50	<0.020	0.112	0.151	<0.020
	Zinc (Zn)-Total (mg/kg wwt)	13.4	0.90	7.58	12.5	0.61
	Zirconium (Zr)-Total (mg/kg wwt)	0.617	<0.040	0.062	0.092	<0.040

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1988451-202	L1988451-203	L1988451-204	L1988451-206	L1988451-207
		Description	Tissue	Tissue	Tissue	Tissue	Tissue
		Sampled Date	21-AUG-17	21-AUG-17	21-AUG-17	21-AUG-17	21-AUG-17
		Sampled Time	13:30	13:30	13:30	13:30	13:30
		Client ID	C3-1-SEDGE	C3-1-LICHEN	C3-1-BERRIES	C3-2-SEDGE	C3-2-LICHEN
Grouping	Analyte						
<b>TISSUE</b>							
<b>Physical Tests</b>	% Moisture (%)		39.8	8.59	88.1	34.0	10.7
<b>Metals</b>	Aluminum (Al)-Total (mg/kg wwt)		48.9	343	0.98	45.4	152
	Antimony (Sb)-Total (mg/kg wwt)		<0.0020	0.0118	<0.0020	<0.0020	0.0059
	Arsenic (As)-Total (mg/kg wwt)		0.0441	0.537	<0.0040	0.0520	0.201
	Barium (Ba)-Total (mg/kg wwt)		9.02	6.03	0.519	11.0	9.87
	Beryllium (Be)-Total (mg/kg wwt)		<0.0020	0.0106	<0.0020	0.0022	0.0062
	Bismuth (Bi)-Total (mg/kg wwt)		<0.0020	0.0126	<0.0020	<0.0020	0.0086
	Boron (B)-Total (mg/kg wwt)		1.45	0.43	0.70	1.45	0.54
	Cadmium (Cd)-Total (mg/kg wwt)		0.0063	0.0870	0.0013	0.0337	0.0637
	Calcium (Ca)-Total (mg/kg wwt)		890	1770	75.3	1160	1720
	Cesium (Cs)-Total (mg/kg wwt)		0.0169	0.0772	0.0010	0.0154	0.0382
	Chromium (Cr)-Total (mg/kg wwt)		0.813	6.20	0.012	0.732	1.60
	Cobalt (Co)-Total (mg/kg wwt)		0.142	1.25	0.0076	0.0796	0.207
	Copper (Cu)-Total (mg/kg wwt)		0.601	0.982	0.361	0.909	1.16
	Iron (Fe)-Total (mg/kg wwt)		94.2	679	2.03	86.1	285
	Lead (Pb)-Total (mg/kg wwt)		0.0500	1.09	<0.0040	0.0698	0.625
	Lithium (Li)-Total (mg/kg wwt)		<0.10	0.21	<0.10	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)		587	1670	50.0	280	345
	Manganese (Mn)-Total (mg/kg wwt)		69.0	47.7	3.20	65.1	78.7
	Mercury (Hg)-Total (mg/kg wwt)		0.0079	0.0766	<0.0010	0.0076	0.0981
	Molybdenum (Mo)-Total (mg/kg wwt)		0.234	0.0919	0.0061	1.66	0.0666
	Nickel (Ni)-Total (mg/kg wwt)		7.28	32.7	0.503	2.10	1.32
	Phosphorus (P)-Total (mg/kg wwt)		251	251	82.1	257	402
	Potassium (K)-Total (mg/kg wwt)		2390	962	936	3260	1250
	Rubidium (Rb)-Total (mg/kg wwt)		2.99	2.40	1.33	4.17	2.17
	Selenium (Se)-Total (mg/kg wwt)		<0.010	0.075	<0.010	0.013	0.070
	Sodium (Na)-Total (mg/kg wwt)		36.2	202	<4.0	29.1	78.4
	Strontium (Sr)-Total (mg/kg wwt)		2.37	4.66	0.104	2.29	3.62
	Tellurium (Te)-Total (mg/kg wwt)		<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)		0.00108	0.00448	<0.00040	0.00089	0.00620
	Tin (Sn)-Total (mg/kg wwt)		<0.020	<0.020	0.023	<0.020	<0.020
	Uranium (U)-Total (mg/kg wwt)		0.00416	0.0340	<0.00040	0.00419	0.0224
	Vanadium (V)-Total (mg/kg wwt)		0.109	0.763	<0.020	0.104	0.292
	Zinc (Zn)-Total (mg/kg wwt)		4.27	10.8	0.61	10.4	15.0
	Zirconium (Zr)-Total (mg/kg wwt)		0.063	0.255	<0.040	0.055	0.161

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1988451-208 Tissue 21-AUG-17 13:30 C3-2-BERRIES	L1988451-210 Tissue 21-AUG-17 13:30 C3-3-SEDGE	L1988451-211 Tissue 21-AUG-17 13:30 C3-3-LICHEN	L1988451-212 Tissue 21-AUG-17 13:30 C3-3-BERRIES	L1988451-214 Tissue 21-AUG-17 13:30 C3-4-SEDGE
Grouping	Analyte					
<b>TISSUE</b>						
<b>Physical Tests</b>	% Moisture (%)	87.8	39.5	7.76	85.9	37.7
<b>Metals</b>	Aluminum (Al)-Total (mg/kg wwt)	1.73	44.5	390	1.11	42.8
	Antimony (Sb)-Total (mg/kg wwt)	<0.0020	<0.0020	0.0077	<0.0020	<0.0020
	Arsenic (As)-Total (mg/kg wwt)	<0.0040	0.0392	0.349	<0.0040	0.0463
	Barium (Ba)-Total (mg/kg wwt)	0.945	9.21	11.5	0.499	10.5
	Beryllium (Be)-Total (mg/kg wwt)	<0.0020	0.0032	0.0150	<0.0020	0.0024
	Bismuth (Bi)-Total (mg/kg wwt)	<0.0020	<0.0020	0.0158	<0.0020	<0.0020
	Boron (B)-Total (mg/kg wwt)	0.85	1.50	0.50	0.59	1.51
	Cadmium (Cd)-Total (mg/kg wwt)	0.0073	0.0227	0.103	0.0068	0.0091
	Calcium (Ca)-Total (mg/kg wwt)	123	1040	2120	92.4	1270
	Cesium (Cs)-Total (mg/kg wwt)	0.0018	0.0199	0.0877	0.0032	0.0184
	Chromium (Cr)-Total (mg/kg wwt)	0.151	0.691	3.52	0.014	0.803
	Cobalt (Co)-Total (mg/kg wwt)	0.0112	0.129	0.445	0.0046	0.0686
	Copper (Cu)-Total (mg/kg wwt)	0.554	0.932	1.20	0.377	1.11
	Iron (Fe)-Total (mg/kg wwt)	3.15	83.8	699	2.08	85.1
	Lead (Pb)-Total (mg/kg wwt)	<0.0040	0.0495	1.25	0.0052	0.0777
	Lithium (Li)-Total (mg/kg wwt)	<0.10	<0.10	0.25	<0.10	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)	57.4	507	600	48.9	440
	Manganese (Mn)-Total (mg/kg wwt)	9.28	144	52.6	5.47	72.7
	Mercury (Hg)-Total (mg/kg wwt)	<0.0010	0.0071	0.133	<0.0010	0.0071
	Molybdenum (Mo)-Total (mg/kg wwt)	0.0123	0.375	0.0777	0.0046	0.463
	Nickel (Ni)-Total (mg/kg wwt)	0.623	3.03	2.24	0.204	2.13
	Phosphorus (P)-Total (mg/kg wwt)	102	342	297	88.4	389
	Potassium (K)-Total (mg/kg wwt)	935	3040	1030	893	3540
	Rubidium (Rb)-Total (mg/kg wwt)	1.94	4.86	2.50	2.59	4.24
	Selenium (Se)-Total (mg/kg wwt)	<0.010	0.014	0.094	<0.010	0.014
	Sodium (Na)-Total (mg/kg wwt)	<4.0	28.0	107	<4.0	22.5
	Strontium (Sr)-Total (mg/kg wwt)	0.205	3.51	6.48	0.133	3.74
	Tellurium (Te)-Total (mg/kg wwt)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)	<0.00040	0.00133	0.00643	<0.00040	0.00066
	Tin (Sn)-Total (mg/kg wwt)	0.036	<0.020	0.021	0.040	<0.020
	Uranium (U)-Total (mg/kg wwt)	<0.00040	0.00421	0.0403	<0.00040	0.00372
	Vanadium (V)-Total (mg/kg wwt)	<0.020	0.095	0.807	<0.020	0.095
	Zinc (Zn)-Total (mg/kg wwt)	0.89	14.1	14.7	0.97	6.76
	Zirconium (Zr)-Total (mg/kg wwt)	<0.040	0.068	0.294	<0.040	0.055

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.



## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1988451-215	L1988451-216	L1988451-218	L1988451-219	L1988451-220
		Description	Tissue	Tissue	Tissue	Tissue	Tissue
		Sampled Date	21-AUG-17	21-AUG-17	21-AUG-17	21-AUG-17	21-AUG-17
		Sampled Time	13:30	13:30	13:30	13:30	13:30
		Client ID	C3-4-LICHEN	C3-4-BERRIES	C3-5-SEDGE	C3-5-LICHEN	C3-5-BERRIES
Grouping	Analyte						
<b>TISSUE</b>							
<b>Physical Tests</b>	% Moisture (%)		6.77	89.9	32.2	8.13	89.0
<b>Metals</b>	Aluminum (Al)-Total (mg/kg wwt)		532	1.22	48.8	420	0.94
	Antimony (Sb)-Total (mg/kg wwt)		0.0122	<0.0020	0.0021	0.0101	<0.0020
	Arsenic (As)-Total (mg/kg wwt)		0.738	0.0048	0.0433	0.297	<0.0040
	Barium (Ba)-Total (mg/kg wwt)		14.5	0.728	10.1	18.9	0.414
	Beryllium (Be)-Total (mg/kg wwt)		0.0184	<0.0020	<0.0020	0.0196	<0.0020
	Bismuth (Bi)-Total (mg/kg wwt)		0.0205	<0.0020	<0.0020	0.0207	<0.0020
	Boron (B)-Total (mg/kg wwt)		0.43	0.45	1.22	0.55	0.54
	Cadmium (Cd)-Total (mg/kg wwt)		0.134	0.0012	0.0087	0.100	<0.0010
	Calcium (Ca)-Total (mg/kg wwt)		2140	86.1	771	2320	56.6
	Cesium (Cs)-Total (mg/kg wwt)		0.115	0.0022	0.0199	0.0775	0.0039
	Chromium (Cr)-Total (mg/kg wwt)		7.32	0.016	0.870	3.31	0.012
	Cobalt (Co)-Total (mg/kg wwt)		0.614	0.0041	0.124	0.416	<0.0040
	Copper (Cu)-Total (mg/kg wwt)		1.65	0.463	1.03	1.32	0.506
	Iron (Fe)-Total (mg/kg wwt)		1080	2.41	88.4	668	1.99
	Lead (Pb)-Total (mg/kg wwt)		2.18	<0.0040	0.0512	1.33	<0.0040
	Lithium (Li)-Total (mg/kg wwt)		0.35	<0.10	<0.10	0.25	<0.10
	Magnesium (Mg)-Total (mg/kg wwt)		760	52.0	349	443	32.2
	Manganese (Mn)-Total (mg/kg wwt)		58.0	5.11	74.7	44.4	2.35
	Mercury (Hg)-Total (mg/kg wwt)		0.0755	<0.0010	0.0079	0.194	<0.0010
	Molybdenum (Mo)-Total (mg/kg wwt)		0.177	0.0134	0.253	0.0595	<0.0040
	Nickel (Ni)-Total (mg/kg wwt)		4.11	0.211	1.90	2.50	0.111
	Phosphorus (P)-Total (mg/kg wwt)		348	103	212	265	66.6
	Potassium (K)-Total (mg/kg wwt)		1160	824	2870	926	702
	Rubidium (Rb)-Total (mg/kg wwt)		3.79	2.36	3.49	2.65	1.78
	Selenium (Se)-Total (mg/kg wwt)		0.088	<0.010	0.011	0.104	<0.010
	Sodium (Na)-Total (mg/kg wwt)		166	<4.0	38.1	60.3	<4.0
	Strontium (Sr)-Total (mg/kg wwt)		6.35	0.151	3.04	7.14	0.099
	Tellurium (Te)-Total (mg/kg wwt)		<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Thallium (Tl)-Total (mg/kg wwt)		0.00791	<0.00040	0.00127	0.00894	<0.00040
	Tin (Sn)-Total (mg/kg wwt)		0.030	0.028	<0.020	0.029	0.027
	Uranium (U)-Total (mg/kg wwt)		0.0465	<0.00040	0.00391	0.0790	<0.00040
	Vanadium (V)-Total (mg/kg wwt)		1.04	<0.020	0.110	0.830	<0.020
	Zinc (Zn)-Total (mg/kg wwt)		15.7	0.58	6.69	14.5	0.49
	Zirconium (Zr)-Total (mg/kg wwt)		0.459	<0.040	0.085	0.347	<0.040

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Antimony (Sb)-Total	DUP-H	L1988451-10, -130, -135, -143, -147, -151, -154, -155, -158, -162, -170, -178, -182, -206, -207, -26, -27, -30, -34, -35, -38, -39, -51, -54, -55, -58, -59, -62
Duplicate	Antimony (Sb)-Total	DUP-H	L1988451-143
Duplicate	Boron (B)-Total	DUP-H	L1988451-10, -130, -135, -143, -147, -151, -154, -155, -158, -162, -170, -178, -182, -206, -207, -26, -27, -30, -34, -35, -38, -39, -51, -54, -55, -58, -59, -62
Duplicate	Cesium (Cs)-Total	DUP-H	L1988451-10, -130, -135, -143, -147, -151, -154, -155, -158, -162, -170, -178, -182, -206, -207, -26, -27, -30, -34, -35, -38, -39, -51, -54, -55, -58, -59, -62
Duplicate	% Moisture	DUP-H	L1988451-10, -11, -12, -14, -15, -16, -18, -19, -2, -20, -202, -22, -23, -24, -26, -27, -3, -30, -34, -35, -4, -6, -7, -8
Method Blank	Copper (Cu)-Total	MB-LOR	L1988451-143

### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.
MB-LOR	Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level.

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<b>HG-200.2-CVAF-VA</b>	Soil	Mercury in Soil by CVAFS Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CVAFS.	EPA 200.2/1631E (mod)
<b>HG-WET-CVAFS-N-VA</b>	Tissue	Mercury in Tissue by CVAFS (WET) This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Analysis is by atomic fluorescence spectrophotometry or atomic absorption spectrophotometry, adapted from US EPA Method 245.7.	EPA 200.3, EPA 245.7
<b>MET-200.2-CCMS-VA</b>	Soil	Metals in Soil by CRC ICPMS This method uses a heated strong acid digestion with HNO <sub>3</sub> and HCl and is intended to liberate metals that may be environmentally available. Silicate minerals are not solubilized. Dependent on sample matrix, some metals may be only partially recovered, including Al, Ba, Be, Cr, Sr, Ti, Tl, V, W, and Zr. Volatile forms of sulfur (including sulfide) may not be captured, as they may be lost during sampling, storage, or digestion. Analysis is by Collision/Reaction Cell ICPMS.	EPA 200.2/6020A (mod)
<b>MET-WET-CCMS-N-VA</b>	Tissue	Metals in Tissue by CRC ICPMS (WET) This method is conducted following British Columbia Lab Manual method "Metals in Animal Tissue and Vegetation (Biota) - Prescriptive". Tissue samples are homogenized and sub-sampled prior to hotblock digestion with nitric and hydrochloric acids, in combination with addition of hydrogen peroxide. Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).  Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.	EPA 200.3/6020A
<b>MOISTURE-TISS-VA</b>	Tissue	% Moisture in Tissues This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.	Puget Sound WQ Authority, Apr 1997
<b>PH-1:2-VA</b>	Soil	pH in Soil (1:2 Soil:Water Extraction) This analysis is carried out in accordance with procedures described in the pH, Electrometric in Soil and Sediment method - Section B Physical/Inorganic and Misc. Constituents, BC Environmental Laboratory Manual 2007. The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water. The pH of the solution is then measured using a standard pH probe.	BC WLAP METHOD: PH, ELECTROMETRIC, SOIL

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

## Reference Information

### Chain of Custody Numbers:

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#### **GLOSSARY OF REPORT TERMS**

*Surrogate* - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

*mg/kg* - milligrams per kilogram based on dry weight of sample.

*mg/kg wwt* - milligrams per kilogram based on wet weight of sample.

*mg/kg lwt* - milligrams per kilogram based on lipid-adjusted weight of sample.

*mg/L* - milligrams per litre.

*<* - Less than.

*D.L.* - The reported Detection Limit, also known as the Limit of Reporting (LOR).

*N/A* - Result not available. Refer to qualifier code and definition for explanation.

*Test results reported relate only to the samples as received by the laboratory.*

*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



L1988451-COFC

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC #

Page 1 of

Report To: Agnico Eagle Mines Ltd.-Meadowbank Division
Report Format / Distribution: [X] PDF [X] Excel
Service Requested: [X] Regular (Standard Turnaround Times - Business Days)

Analysis Request: Please indicate below Filtered, Preserved or both (F, P, F/P)
Client / Project Information: Job #: Meadowbank SLRA
Quote #: Q63971

ALS Share Contact: Stack
Sampler: LB+FL

Table with columns: Sample #, Sample Identification, Date, Time, Sample Type, Met+Hg+pH, Metals, Mercury, and Number of Containers. Contains 12 rows of sample data.

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc)/ Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.

SHIPMENT, RELEASE (client use) / SHIPMENT, RECEPTION (lab use only) / SHIPMENT VERIFICATION (lab use only)
Released by: PAUL Date: SEP 8 Time: 08:30 Temperature: 15 °C



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Chain of Custody / Analytical Request Form
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Report To: Agnico Eagle Mines Ltd.-Meadowbank Division
Report Format / Distribution: Standard, Other, PDF, Excel, Digital, Fax
Service Requested: Regular (Standard Turnaround Times - Business Days)

Invoice To: Same as Report?
Hardcopy of Invoice with Report?
Client / Project Information: PO / AFE: 630133, LSD:
Analysis Request: Please indicate below Filtered, Preserved or both (F, P, F/P)

Lab Work Order #
ALS Contact:
Sampler: LB+FL

Table with columns: Sample #, Sample Identification, Date, Time, Sample Type, and various analysis parameters (Metals, Mercury, etc.). Rows include samples T1-4, T1-5, and T2-1.

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

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SHIPMENT RELEASE (client use) / SHIPMENT RECEPTION (lab use only) / SHIPMENT VERIFICATION (lab use only)
Released by: Date: Time: Received by: PAUL Date: SEP 8 Time: 08:30 Temperature: 15 °C Verified by: Date: Time: Observations: Yes / No ? If Yes add SIF



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Page 1 of \_\_\_\_\_

<b>Report To</b>	<b>Report Format / Distribution</b>	<b>Service Requested</b> (Rush for routine analysis subject to availability)
Company: Agnico Eagle Mines Ltd.-Meadowbank Division	<input type="checkbox"/> Standard <input checked="" type="checkbox"/> Other	<input checked="" type="radio"/> Regular (Standard Turnaround Times - Business Days)
Contact:	<input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> Excel <input type="checkbox"/> Digital <input type="checkbox"/> Fax	<input type="radio"/> Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address: Baker Lake NU X0C 0A0	Email 1:	<input type="radio"/> Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
Phone: Fax:	Email 2:	<input type="radio"/> Same Day or Weekend Emergency - Contact ALS to Confirm TAT
	Email 3: leilan.baxter@agnicoeagle.com	

Invoice To Same as Report? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<b>Client / Project Information</b>	<b>Analysis Request</b>																			
Hardcopy of Invoice with Report? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Please indicate below Filtered, Preserved or both (F, P, F/P)																			
Company:	Job #:	Met+Hg+pH (MET-CCME+FUL)	Metals (MET-WET-COMS-VA)	Mercury (HG-WET-CVAFS-VA)														Number of Containers			
Contact:	PO / AFE: 630133																				
Address:	LSD:																				
Phone: Fax:	Quote #:																				

Lab Work Order # (lab use only)	ALS Contact:	Sampler: LB+FL
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Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Met+Hg+pH (MET-CCME+FUL)	Metals (MET-WET-COMS-VA)	Mercury (HG-WET-CVAFS-VA)												
	T2-2- Soil	15-Aug-17	10:15	Soil	X														1
	T2-2- Sedge	15-Aug-17	10:15	Tissue		X	X												1
	T2-2 - Lichen	15-Aug-17	10:15	Tissue		X	X												1
	T2-2 - Berries	15-Aug-17	10:15	Tissue		X	X												1
	T2-3 - Soil	15-Aug-17	10:15	Soil	X														1
	T2-3- Sedge	15-Aug-17	10:15	Tissue		X	X												1
	T2-3- Lichen	15-Aug-17	10:15	Tissue		X	X												1
	T2-3 - Berries	15-Aug-17	10:15	Tissue		X	X												1
	T2-4 - Soil	15-Aug-17	10:15	Soil	X														1
	T2-4- Sedge	15-Aug-17	10:15	Tissue		X	X												1
	T2-4- Lichen	15-Aug-17	10:15	Tissue		X	X												1
	T2-4- Berries	15-Aug-17	10:15	Tissue		X	X												1

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

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<b>SHIPMENT RELEASE</b> (client use)				<b>SHIPMENT RECEPTION</b> (lab use only)				<b>SHIPMENT VERIFICATION</b> (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF	
			PAUL	SEP 8	08:30	15 °C					



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Report To: Agnico Eagle Mines Ltd.-Meadowbank Division
Report Format / Distribution: Standard, Other, PDF, Excel, Digital, Fax
Service Requested: Regular (Standard Turnaround Times - Business Days)
Analysis Request: Filtered, Preserved or both (F, P, F/P)
Sample Identification table with columns: Sample #, Sample Identification, Date, Time, Sample Type, and various analysis columns (Met-Hg+Pb, Metals, Mercury, etc.)
SHIPMENT, RELEASE (client use) / SHIPMENT, RECEPTION (lab use only) / SHIPMENT, VERIFICATION (lab use only)



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<b>Report To</b>	<b>Report Format / Distribution</b>	<b>Service Requested (Rush for routine analysis subject to availability)</b>
Company: Agnico Eagle Mines Ltd.-Meadowbank Division	<input type="checkbox"/> Standard <input checked="" type="checkbox"/> Other	<input checked="" type="radio"/> Regular (Standard Turnaround Times - Business Days)
Contact:	<input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> Excel <input type="checkbox"/> Digital <input type="checkbox"/> Fax	<input type="radio"/> Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address: Baker Lake NU X0C 0A0	Email 1:	<input type="radio"/> Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
Phone: Fax:	Email 2:	<input type="radio"/> Same Day or Weekend Emergency - Contact ALS to Confirm TAT
	Email 3: leilan.baxter@agnicoeagle.com	<b>Analysis Request</b>

Invoice To Same as Report? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<b>Client / Project Information</b>	Please indicate below Filtered, Preserved or both (F, P, F/P)												
Hardcopy of Invoice with Report? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Job #:													
Company:	PO / AFE: 630133													
Contact:	LSD:													
Address:														
Phone: Fax:	Quote #:													

Lab Work Order # (lab use only)	ALS Contact:	Sampler: LB+FL
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Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Met+Hg+pH (MET-CCME+FUL)	Metals (MET-WET-CCMS-VA)	Mercury (HG-WET-CVAFS-VA)											Number of Containers				
T3-3- Soil		16-Aug-17	12:00	Soil	X																1	
T3-3 - Sedge		16-Aug-17	12:00	Tissue		X	X															1
T3-3 - Lichen		16-Aug-17	12:00	Tissue		X	X															1
T3-3 - Berries		16-Aug-17	12:00	Tissue		X	X															1
T3-4- Soil		16-Aug-17	12:00	Soil	X																	1
T3-4- Sedge		16-Aug-17	12:00	Tissue		X	X															1
T3-4 - Lichen		16-Aug-17	12:00	Tissue		X	X															1
T3-4 - Berries		16-Aug-17	12:00	Tissue		X	X															1
T3-5- Soil		16-Aug-17	12:00	Soil	X																	1
T3-5 - Sedge		16-Aug-17	12:00	Tissue		X	X															1
T3-5- Lichen		16-Aug-17	12:00	Tissue		X	X															1
T3-5 - Berries		16-Aug-17	12:00	Tissue		X	X															1

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

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SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
			PAVL	SEP 8	08:30	15 °C				





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COC #

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Report To: Agnico Eagle Mines Ltd.-Meadowbank Division
Report Format / Distribution: Standard, Other, PDF, Excel, Digital, Fax
Service Requested: Regular, Priority, Emergency, Same Day or Weekend Emergency

Invoice To: Same as Report? Yes, No
Hardcopy of Invoice with Report? Yes, No
Client / Project Information: Job #, PO / AFE: 630133, LSD, Quote #

Lab Work Order # (lab use only)
ALS Contact:
Sampler: LB+JQ

Table with columns: Sample #, Sample Identification, Date, Time, Sample Type, Met+Hg+PH, Metals, Mercury, and Number of Containers. Rows include T4-1, T4-2, and T4-3 samples for Soil, Sedge, Lichen, and Berries.

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

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Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use), SHIPMENT RECEPTION (lab use only), SHIPMENT VERIFICATION (lab use only)
Released by: Date: Time: Received by: PAUL Date: SEP 8 Time: 08:30 Temperature: 15 °C Verified by: Date: Time: Observations: Yes / No ? If Yes add SIF



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<b>Report To</b>	<b>Report Format / Distribution</b>	<b>Service Requested</b> (Rush for routine analysis subject to availability)
Company: Agnico Eagle Mines Ltd.-Meadowbank Division	<input type="checkbox"/> Standard <input checked="" type="checkbox"/> Other	<input checked="" type="radio"/> Regular (Standard Turnaround Times - Business Days)
Contact:	<input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> Excel <input type="checkbox"/> Digital <input type="checkbox"/> Fax	<input type="radio"/> Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address: Baker Lake NU X0C 0A0	Email 1:	<input type="radio"/> Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Email 2:	<input type="radio"/> Same Day or Weekend Emergency - Contact ALS to Confirm TAT

Phone: _____ Fax: _____	Email 3: leilan.baxter@agnicoeagle.com	<b>Analysis Request</b>		
Invoice To Same as Report? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<b>Client / Project Information</b>	Please indicate below Filtered, Preserved or both (F, P, F/P)		
Hardcopy of Invoice with Report? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Job #:	Met+Hg+pH (MET-CCME+FUL)	Metals (MET-WET-COMS-VA)	
Company:	PO / AFE:			Mercury (HG-WET-CVAFS-VA)
Contact:	LSD:			
Address:	Quote #:			
Phone: _____ Fax: _____	ALS Contact:			
Lab Work Order # (lab use only)	Sampler: LB+JQ			

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Met+Hg+pH (MET-CCME+FUL)	Metals (MET-WET-COMS-VA)	Mercury (HG-WET-CVAFS-VA)								Number of Containers
	T4-4 - Soil	14-Aug-17	16:45	Soil	X										1
	T4-4 - Sedge	14-Aug-17	16:45	Tissue		X	X								1
	T4-4 - Lichen	14-Aug-17	16:45	Tissue		X	X								1
	T4-4 - Berries	14-Aug-17	16:45	Tissue		X	X								1
	T4-5 - Soil	14-Aug-17	16:45	Soil	X										1
	T4-5 - Sedge	14-Aug-17	16:45	Tissue		X	X								1
	T4-5 - Lichen	14-Aug-17	16:45	Tissue		X	X								1
	T4-5 - Berries	14-Aug-17	16:45	Tissue		X	X								1
	T5-1 - Soil	15-Aug-17	9:30	Soil	X										1
	T5-1 - Sedge	15-Aug-17	9:30	Tissue		X	X								1
	T5-1 - Lichen	15-Aug-17	9:30	Tissue		X	X								1
	T5-1 - Berries	15-Aug-17	9:30	Tissue		X	X								1

Special instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

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SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
			PAUL	SEP 8	08:30	15 °C				



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Report To: Agnico Eagle Mines Ltd.-Meadowbank Division
Report Format / Distribution: Standard, Other, PDF, Excel, Digital, Fax
Service Requested: Regular (Standard Turnaround Times - Business Days)
Analysis Request: Metals, Mercury, etc.
Sample Identification table with columns: Sample #, Sample Identification, Date, Time, Sample Type, and various analysis checkboxes.
Special Instructions / Regulations with water or land use
Failure to complete all portions of this form may delay analysis.
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Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.
SHIPMENT, RELEASE (client use) / SHIPMENT, RECEPTION (lab use only) / SHIPMENT, VERIFICATION (lab use only)
Released by: PAUL, Date: SEP 8, Time: 08:30, Temperature: 15 °C, Verified by: , Date: , Time: , Observations: Yes / No ?



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Report To: Agnico Eagle Mines Ltd.-Meadowbank Division
Report Format / Distribution: Standard, Other, PDF, Excel, Digital, Fax
Service Requested: Regular (Standard Turnaround Times - Business Days)

Analysis Request: Please indicate below Filtered, Preserved or both (F, P, F/P)
Client / Project Information: Job #, PO / AFE, LSD, Quote #
ALS Contact: LB&JQ

Table with columns: Sample #, Sample Identification, Date, Time, Sample Type, and various analysis categories (Metals, Mercury, etc.). Rows include samples T5-5 (Soil, Sedge, Lichen, Berries) and T6-1 (Soil, Sedge, Lichen, Berries), T6-2 (Soil, Sedge, Lichen, Berries).

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

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SHIPMENT RELEASE (client use) / SHIPMENT RECEPTION (lab use only) / SHIPMENT VERIFICATION (lab use only)
Released by: PAUL, Date: SEP 8, Time: 0:30, Temperature: 15 °C

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<b>Report To</b>	<b>Report Format / Distribution</b>	<b>Service Requested</b> (Rush for routine analysis subject to availability)
Company: Agnico Eagle Mines Ltd.-Meadowbank Division	<input type="checkbox"/> Standard <input checked="" type="checkbox"/> Other	<input checked="" type="radio"/> Regular (Standard Turnaround Times - Business Days)
Contact:	<input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> Excel <input type="checkbox"/> Digital <input type="checkbox"/> Fax	<input type="radio"/> Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address: Baker Lake NU X0C 0A0	Email 1:	<input type="radio"/> Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Email 2:	<input type="radio"/> Same Day or Weekend Emergency - Contact ALS to Confirm TAT

Phone: _____ Fax: _____	Email 3: leilan.baxter@agnicoeagle.com	<b>Analysis Request</b>																				
Invoice To Same as Report? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<b>Client / Project Information</b>	Please indicate below Filtered, Preserved or both (F, P, F/P)																				
Hardcopy of Invoice with Report? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Job #:																					
Company:	PO / AFE:	Met+Hg+Pb (MET-CCME+FUL)	Metals (MET-WET-CCMS-VA)	Mercury (HG-WET-CVAFS-VA)																		
Contact:	LSD:																					
Address:	Quote #:																					

Lab Work Order # _____ (lab use only)	ALS Contact: _____	Sampler: LB & STUDENT
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Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Met+Hg+Pb (MET-CCME+FUL)	Metals (MET-WET-CCMS-VA)	Mercury (HG-WET-CVAFS-VA)														Number of Containers
█	T6-3- Soil	15-Aug-17	8:00	Soil	X																1
█	T6-3- Sedge	15-Aug-17	8:00	Tissue		X	X														1
█	T6-3- Lichen	15-Aug-17	8:00	Tissue		X	X														1
█	T6-3- Berries	15-Aug-17	8:00	Tissue		X	X														1
█	T6-4- Soil	15-Aug-17	8:00	Soil	X																1
█	T6-4- Sedge	15-Aug-17	8:00	Tissue		X	X														1
█	T6-4- Lichen	15-Aug-17	8:00	Tissue		X	X														1
█	T6-4- Berries	15-Aug-17	8:00	Tissue		X	X														1
█	T6-5- Soil	15-Aug-17	8:00	Soil	X																1
█	T6-5- Sedge	15-Aug-17	8:00	Tissue		X	X														1
█	T6-5- Lichen	15-Aug-17	8:00	Tissue		X	X														1
█	T6-5- Berries	15-Aug-17	8:00	Tissue		X	X														1

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

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Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
			PAUL	SEP 8	08:30	15 °C				



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Report To: Agnico Eagle Mines Ltd.-Meadowbank Division
Report Format / Distribution: Standard, Other, PDF, Excel, Digital, Fax
Service Requested: Regular (Standard Turnaround Times - Business Days)
Analysis Request: Please indicate below Filtered, Preserved or both (F, P, F/P)
Sample Identification Table: Columns include Sample #, Sample identification, Date, Time, Sample Type, and various analysis parameters like Met+Hg+pH, Metals, Mercury, etc.
Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details
Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.
Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.
SHIPMENT RELEASE (client use) / SHIPMENT RECEPTION (lab use only) / SHIPMENT VERIFICATION (lab use only)
Released by: PAUL, Date: SEP 8, Time: 08:30, Temperature: 15 °C, Verified by: [blank], Date: [blank], Time: [blank], Observations: Yes / No ? If Yes add SIF



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Report To: Agnico Eagle Mines Ltd.-Meadowbank Division
Report Format / Distribution: Standard, Other, PDF, Excel, Digital, Fax
Service Requested: Regular (Standard Turnaround Times - Business Days)
Analysis Request: Filtered, Preserved or both (F, P, F/P)
Sample Identification: T7-4- Soil, T7-4- Sedge, T7-4- Lichen, T7-4- Berries, T7-5- Soil, T7-5- Sedge, T7-5- Lichen, T7-5- Berries
Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details
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Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.
SHIPMENT, RELEASE (client use) / SHIPMENT, RECEPTION (lab use only) / SHIPMENT, VERIFICATION (lab use only)



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<b>Report To</b>		<b>Report Format / Distribution</b>				<b>Service Requested</b> (Rush for routine analysis subject to availability)																																																																		
Company: Agnico Eagle Mines Ltd.-Meadowbank Division		<input type="checkbox"/> Standard <input checked="" type="checkbox"/> Other <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> Excel <input type="checkbox"/> Digital <input type="checkbox"/> Fax				<input checked="" type="radio"/> Regular (Standard Turnaround Times - Business Days) <input type="radio"/> Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT <input type="radio"/> Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT <input type="radio"/> Same Day or Weekend Emergency - Contact ALS to Confirm TAT																																																																		
Contact:		Email 1:				<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td colspan="12" style="text-align: center;"><b>Analysis Request</b></td> <td rowspan="4" style="writing-mode: vertical-rl; text-orientation: mixed; text-align: center;"><b>Number of Containers</b></td> </tr> <tr> <td colspan="12">Please indicate below Filtered, Preserved or both (F, P, F/P)</td> </tr> <tr> <td style="writing-mode: vertical-rl; text-orientation: mixed; text-align: center;">Met+Hg+pH (MET-COME+FUL)</td> <td style="writing-mode: vertical-rl; text-orientation: mixed; text-align: center;">Metals (MET-WET-CCMS-VA)</td> <td style="writing-mode: vertical-rl; text-orientation: mixed; text-align: center;">Mercury (HG-WET-CVAFS-VA)</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </table>												<b>Analysis Request</b>												<b>Number of Containers</b>	Please indicate below Filtered, Preserved or both (F, P, F/P)												Met+Hg+pH (MET-COME+FUL)	Metals (MET-WET-CCMS-VA)	Mercury (HG-WET-CVAFS-VA)																											
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Met+Hg+pH (MET-COME+FUL)	Metals (MET-WET-CCMS-VA)	Mercury (HG-WET-CVAFS-VA)																																																																						
Address: Baker Lake NU X0C 0A0		Email 2:																																																																						
Phone:                      Fax:		Email 3: <a href="mailto:leilan.baxter@agnicoeagle.com">leilan.baxter@agnicoeagle.com</a>																																																																						
Invoice To Same as Report? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<b>Client / Project Information</b>																																																																						
Hardcopy of Invoice with Report? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Job #:																																																																						
Company:		PO / AFE:																																																																						
Contact:		LSD:																																																																						
Address:		Quote #:																																																																						
Phone:                      Fax:		ALS Contact:		Sampler:																																																																				
Lab Work Order # [REDACTED] (lab use only)																																																																								
<b>Sample #</b>	<b>Sample Identification</b> (This description will appear on the report)			<b>Date</b> (dd-mmm-yy)	<b>Time</b> (hh:mm)	<b>Sample Type</b>	Met+Hg+pH (MET-COME+FUL)	Metals (MET-WET-CCMS-VA)	Mercury (HG-WET-CVAFS-VA)																																																															
[REDACTED]	T8-1- Soil			18-Aug-17	15:00	Soil	X																	1																																																
[REDACTED]	T8-1- Sedge			18-Aug-17	15:00	Tissue		X	X															1																																																
[REDACTED]	T8-1- Lichen			18-Aug-17	15:00	Tissue		X	X															1																																																
[REDACTED]	T8-1 - Berries			18-Aug-17	15:00	Tissue		X	X															1																																																
[REDACTED]	T8-2- Soil			18-Aug-17	15:00	Soil	X																	1																																																
[REDACTED]	T8-2 - Sedge			18-Aug-17	15:00	Tissue		X	X															1																																																
[REDACTED]	T8-2- Lichen			18-Aug-17	15:00	Tissue		X	X															1																																																
[REDACTED]	T8-2- Berries			18-Aug-17	15:00	Tissue		X	X															1																																																
[REDACTED]	T8-3- Soil			18-Aug-17	15:00	Soil	X																	1																																																
[REDACTED]	T8-3- Sedge			18-Aug-17	15:00	Tissue		X	X															1																																																
[REDACTED]	T8-3 - Lichen			18-Aug-17	15:00	Tissue		X	X															1																																																
[REDACTED]	T8-3 - Berries			18-Aug-17	15:00	Tissue		X	X															1																																																
<b>Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details</b>																																																																								
<p>Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.</p> <p>By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.</p> <p>Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.</p>																																																																								
<b>SHIPMENT RELEASE (client use)</b>						<b>SHIPMENT RECEIPT (lab use only)</b>						<b>SHIPMENT VERIFICATION (lab use only)</b>																																																												
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF																																																														
			PAUL	SEP 8	08:30	15 °C																																																																		





L1988451-COFC

Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
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COC #

Page 1 of

Report To: Agnico Eagle Mines Ltd.-Meadowbank Division
Report Format / Distribution: Standard, Other, PDF, Excel, Digital, Fax
Service Requested: Regular (Standard Turnaround Times - Business Days)

Invoice To: Same as Report? Yes, No
Hardcopy of Invoice with Report? Yes, No
Client / Project Information: Job #, PO / AFE, LSD, Quote #

Table with columns: Sample #, Sample Identification, Date, Time, Sample Type, Met+Hg+pH, Metals, Mercury, and Number of Containers. Rows include samples T8-4, T8-5, and C1-1 for various materials like Soil, Sedge, Lichen, and Berries.

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.

SHIPMENT RELEASE (client use) and SHIPMENT RECEPTION (lab use only) fields. Includes fields for Released by, Date, Time, Received by, Date, Time, Temperature, Verified by, Date, Time, and Observations.



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COC #

Page 1 of

Report To: Agnico Eagle Mines Ltd.-Meadowbank Division
Report Format / Distribution: [X] PDF, [X] Excel, [ ] Digital, [ ] Fax
Service Requested: [X] Regular (Standard Turnaround Times - Business Days)

Invoice To: Same as Report? [X] Yes, [ ] No
Hardcopy of Invoice with Report? [ ] Yes, [X] No
Client / Project Information: Job #, PO / AFE, LSD, Quote #

Lab Work Order # (lab use only)
ALS Contact:
Sampler:

Table with columns: Sample #, Sample Identification, Date, Time, Sample Type, Met+Hg+pH, Metals, Mercury, and Number of Containers. Contains 16 rows of sample data.

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use) / SHIPMENT RECEPTION (lab use only) / SHIPMENT VERIFICATION (lab use only)
Released by: PAUL
Date: SEP 8
Time: 08:30
Temperature: 15 °C
Verified by:
Date:
Time:
Observations: Yes / No ? If Yes add SIF



L1988451-COFC

Report To: Agnico Eagle Mines Ltd.-Meadowbank Division
Report Format / Distribution: Standard, Other, PDF, Excel, Digital, Fax
Service Requested: Regular (Standard Turnaround Times - Business Days)
Analysis Request: Filtered, Preserved or both (F, P, F/P)
Sample Identification table with columns: Sample #, Sample Identification, Date, Time, Sample Type, and various chemical analysis columns (Met+Hg+pH, Metals, Mercury, etc.)
SHIPMENT RELEASE (client use), SHIPMENT RECEPTION (lab use only), SHIPMENT VERIFICATION (lab use only)



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COC # \_\_\_\_\_

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Report To, Report Format / Distribution, Service Requested (Rush for routine analysis subject to availability)
Company: Agnico Eagle Mines Ltd.-Meadowbank Division
Contact: Baker Lake NU X0C 0A0
Address: Baker Lake NU X0C 0A0
Phone: 819 759 3555 Fax:
Invoice To Same as Report? [X] Yes [ ] No
Hardcopy of Invoice with Report? [ ] Yes [X] No
Client / Project Information
Job #:
PO / AFE:
LSD:
Quote #:
ALS Contact:
Sampler:
Analysis Request
Please indicate below Filtered, Preserved or both (F, P, F/P)

Lab Work Order # (lab use only)
Sample #
Sample Identification (This description will appear on the report)
Date (dd-mm-yy)
Time (hh:mm)
Sample Type
Met+Hg+pH (MET-CCME+FUL)
Metals (MET-WET-CCMS-VA)
Mercury (HG-WET-CVAFS-VA)
Number of Containers

Table with columns: Sample #, Sample Identification, Date, Time, Sample Type, Met+Hg+pH, Metals, Mercury, and Number of Containers. Contains 12 rows of sample data.

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use), SHIPMENT RECEPTION (lab use only), SHIPMENT VERIFICATION (lab use only)
Released by: PAUL Date: SEP 8 Time: 08:30 Temperature: 15 °C
Verified by: Date: Time: Observations: Yes / No? If Yes add SIF

AVG. OF 3



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COC #

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Report To: Agnico Eagle Mines Ltd.-Meadowbank Division
Report Format / Distribution: Standard, Other, PDF, Excel, Digital, Fax
Service Requested: Regular (Standard Turnaround Times - Business Days)
Analysis Request: Please indicate below Filtered, Preserved or both (F, P, F/P)
Sample Identification table with columns: Sample #, Sample Identification, Date, Time, Sample Type, and various analyte columns (Met+Hg+pH, Metals, Mercury, etc.)
Special Instructions / Regulations with water or land use
Failure to complete all portions of this form may delay analysis.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.
Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.
SHIPMENT RELEASE (client use) / SHIPMENT RECEPTION (lab use only) / SHIPMENT VERIFICATION (lab use only)
Released by: PAUL, Date: SEP 8, Time: 08:30, Temperature: 15 °C, Verified by: [blank], Date: [blank], Time: [blank], Observations: Yes / No ? If Yes add SIF

AVG. OF 3.



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COC #

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Report To: Agnico Eagle Mines Ltd.-Meadowbank Division
Report Format / Distribution: [X] PDF [X] Excel
Service Requested: [X] Regular
Analysis Request table with columns for Sample #, Identification, Date, Time, Sample Type, and various analysis methods (Met+Hg+pH, Metals, Mercury).
Special Instructions / Regulations with water or land use
Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.
SHIPMENT RELEASE (client use)
SHIPMENT RECEPTION (lab use only)
SHIPMENT VERIFICATION (lab use only)