



Taseko Prosperity Gold-Copper Project

Appendix 5-5-D

5. TRACE ELEMENTS IN VEGETATION

5.1 Introduction

5.1.1 Objectives

Since the mine site area is highly mineralized, the native vegetation may contain elevated levels of trace elements. In order to assess the effects of mine development on the concentration of trace elements in vegetation, the baseline levels were determined. The baseline levels form the context from which a monitoring program will be developed. The existing concentrations of trace elements in vegetation will be used as the standard for comparison to the levels found in vegetation after mine closure.

5.1.2 Study Area

Vegetation samples were collected in the vicinity of the mine site to characterize the trace element concentrations that occur in the area that will be directly affected by mine development. The area sampled relative to the proposed mine site layout is presented on Map 5-1.

5.1.3 Background Information

Meetings were held with a representative of First Nations to determine which native plant species were typically harvested in the Fish Lake area (Pers. comm., Dan Case, Chief Stone Reserve, November 25, 1998). It was indicated that the most commonly used plants were rose (*Rosa* sp.), soopolallie (*Shepherdia canadensis*), and tea (*Ledum* sp.). The meeting was held in 1998, three years after the vegetation samples were collected, and two of the three plant species identified were sampled during the initial program. *Ledum* sp. will be sampled prior to mine development to establish baseline levels for comparison after reclamation.

5.2 Approach and Methodology

Vegetation samples were collected in the vicinity of the mine site by Hallam Knight Piésold Ltd. in June and August 1995 from plants that showed signs of browsing by cattle, moose, rabbit, or deer (Hallam Knight Piésold Ltd. 1997). Only the portions of the plants that would have forage potential such as new leaves, new twigs, inflorescences, culms of grasses and sedges, and the stems/stalks of herbs were collected.

Analytical Services Limited, Vancouver, BC, analyzed the samples for total trace element content. The number of samples collected for each plant type is specified in Tables 5-1 to 5-4. The sample site locations are presented on Map 5-1. Standard quality control/quality assurance procedures were followed by the laboratory including analysis of duplicate samples, method blanks, and certified reference materials. The methods used for analysis are included in Appendix ?, with the laboratory results.

5.3 Baseline Conditions

The concentration of total trace elements in vegetation were grouped into plant type categories and summarized (Tables 5-1 to 5-4). A list of the plant species collected for each sample is provided in Table 5-5. Tables 5-1 and 5-2 present trace elements for vegetation samples collected in June and August 1995, respectively.

Table 5-3 presents the data for June and August combined, giving an overall characterization of the mine area, which has been compared to other mines in BC (Jones et al Draft). The Jones' document presents the range of background concentrations for eight trace elements in vegetation samples collected on mines throughout British Columbia. The concentration of the same eight trace elements in samples collected at Fish Lake were within the range reported for other mines.

In the August 1995 sampling program, selected shrub samples were collected and divided into leaves and stems. This sampling strategy was used to characterize the potential for certain trace elements to be sequestered into various plant parts. The concentration of trace elements were similar between the leaves and stems for all but seven of the 21 elements analyzed. For the seven elements, the concentrations were twice as high in leaves compared to stems. The seven elements are calcium, iron, manganese, molybdenum, potassium, sodium, and strontium. Two of the seven trace elements, calcium and potassium, are macronutrients that are required in large quantities for good plant growth. The results of the trace element analysis for leaves and stems of shrubs are presented in Table 5-4.

The plant species identified as having traditional use are soopolallie, rose, and tea. The concentration of trace elements was determined in four samples of soopolallie; two collected in June 1995 and two collected in August 1995. The laboratory results are presented in Appendix ?, sample numbers 95-V33, 95-V39, 95-27, and 95-39. Two samples of prickly rose (*Rosa acicularis*) were also collected in June 1995 and analyzed. The data is presented in Appendix ?, samples 95-13 and 95-40.

5.4 Monitoring Program

Throughout mine life, areas of the mine site will be revegetated and plant samples collected and analyzed to determine if trace element concentrations on reclaimed sites vary from the baseline values. For instance, the slope of the tailings embankment will be reclaimed periodically throughout mine life as the embankment crest is raised. Once vegetation is established on reclaimed areas, samples will be collected to monitor changes in trace element uptake.

Most of the reclamation activities will be conducted after mine closure. A comprehensive study of trace element concentration in vegetation will be carried out when the tailings storage facility, waste rock dump, ore stockpile foundations, and plant site are revegetated. The sampling program will focus on vegetation and plant parts typically used as food for ungulates and cattle, similar to the 1995 program. Samples of soopolallie, prickly rose, and tea will also be collected. The trace element concentration in vegetation growing on reclaimed land will be compared to the pre-mine baseline levels.

If it is shown that plants accumulate trace elements to levels greater than background concentrations in certain areas and there is concern that wildlife or cattle may be affected, suitable mitigation measures will be developed. Such measures may include the placement of additional suitable soil material over the enriched area to create a buffer that prevents plant uptake.

5.5 Summary and Key Conclusions

It is important to establish the baseline concentration of trace elements in vegetation to represent the plant species in the area and the distribution of natural occurrences of elements. In the event that mining activities result in plant accumulations that are greater than background, mitigation measures will be implemented that reduce plant uptake and potential transfer to wildlife and cattle.

**Table 5-1:
Background Concentration of Total Trace Elements in Vegetation Sampled in June 1995**

Trace Element	Total Concentration (mg/kg)			
	Shrub/Tree	Grass	Legume	Herb
	Mean (min-max) ¹	Mean (min-max) ²	Mean (min-max) ³	Mean (min-max) ⁴
Aluminum	24 (5-106)	20 (5-29)	89 (64-113)	32 (16-44)
Antimony	5 (5-5)	5 (5-5)	5 (5-5)	5 (5-5)
Arsenic	0.028 (0.025-0.07)	0.030 (0.025-0.05)	0.153 (0.025-0.28)	0.025 (0.025-0.025)
Barium	7.46 (1.13-38.7)	8.93 (3.09-15.7)	29.1 (12.9-45.3)	6.66 (3.19-15.2)
Beryllium	0.125 (0.125-0.125)	0.125 (0.125-0.125)	0.125 (0.125-0.125)	0.125 (0.125-0.125)
Cadmium	0.65 (0.25-5.56)	0.25 (0.25-0.25)	0.25 (0.25-0.25)	0.25 (0.25-0.25)
Calcium	6536 (2460-13100)	2050 (1170-3890)	20950 (16500-25400)	6748 (5780-7810)
Chromium	0.6 (0.5-1.5)	1.1 (0.5-2)	0.5 (0.5-0.5)	0.5 (0.5-0.5)
Cobalt	0.6 (0.5-1.6)	0.5 (0.5-0.5)	0.5 (0.5-0.5)	0.5 (0.5-0.5)
Copper	8.72 (5.36-17.2)	8.15 (7.26-8.56)	11.70 (6.69-16.7)	7.52 (6.85-8.44)
Iron	72.5 (40-200)	80.5 (57.2-98.2)	191 (131-250)	87.3 (58.5-108)
Lead	0.19 (0.05-0.65)	0.1 (0.025-0.2)	0.1 (0.1-0.1)	0.156 (0.025-0.3)
Magnesium	2549 (1250-4200)	1654 (1050-2750)	4875 (4630-5120)	3018 (2310-3550)
Manganese	136.9 (18.1-592)	126 (48.8-174)	117.7 (69.3-166)	51.6 (22.1-86.9)
Molybdenum	0.313 (0.125-1.65)	2.7 (1.4-5.5)	0.98 (0.85-1.1)	0.88 (0.25-1.55)
Nickel	3.4 (1.2-8.7)	2.1 (0.5-4.2)	2.6 (2.3-2.8)	2.1 (0.5-4.3)
Potassium	10976 (4350-14200)	25280 (20400-32500)	28750 (25700-31800)	35000 (20400-48900)
Selenium	5 (5-5)	5 (5-5)	5 (5-5)	5 (5-5)
Silver	0.5 (0.5-0.5)	0.5 (0.5-0.5)	0.5 (0.5-0.5)	0.5 (0.5-0.5)

¹ n = 18

² n = 5

³ n = 2

⁴ n = 4

Trace Element	Total Concentration (mg/kg)			
	Shrub/Tree	Grass	Legume	Herb
	Mean (min-max) ¹	Mean (min-max) ²	Mean (min-max) ³	Mean (min-max) ⁴
Sodium	50 (50-50)	62 (50-112)	156 (119-192)	50 (50-50)
Strontium	27.1 (9.08-60.9)	9.45 (5.3-17.8)	119 (107-130)	29.4 (17.8-38.5)
Tin	7.5 (7.5-7.5)	7.5 (7.5-7.5)	7.5 (7.5-7.5)	7.5 (7.5-7.5)
Zinc	94.6 (14.8-222)	25.2 (19.1-31.9)	30.2 (21.7-38.7)	31.8 (24.7-40.9)

**Table 5-2:
Background Concentration of Total Trace Elements In Vegetation Sampled in August 1995**

Trace Element	Total Concentration (mg/kg)				
	Shrub/Tree	Grass	Legume	Herb	Sedge
	Mean (min-max) ⁵	Mean (min-max) ⁶	Mean (min-max) ⁷	Mean (min-max) ⁸	Mean (min-max) ⁹
Aluminum	9 (5-35)	21 (5-60)	141 (15-313)	129 (12-439)	8 (5-15)
Antimony	5 (5-5)	5 (5-5)	5 (5-5)	5 (5-5)	5 (5-5)
Arsenic	0.038 (0.025-0.21)	0.094 (0.025-0.56)	0.080 (0.025-0.22)	0.044 (0.025-0.12)	0.110 (0.025-0.28)
Barium	3.10 (0.25-25.8)	13.91 (1.5-31.4)	9.18 (0.5-22.7)	8.11 (4.36-14)	23.7 (13.4-36.3)
Beryllium	0.125 (0.125-0.125)	0.125 (0.125-0.125)	0.125 (0.125-0.125)	0.125 (0.125-0.125)	0.125 (0.125-0.125)
Cadmium	0.28 (0.25-0.92)	0.25 (0.25-0.25)	0.25 (0.25-0.25)	0.25 (0.25-0.25)	0.25 (0.25-0.25)
Calcium	10374 (3360-19200)	3191 (1990-4690)	17060 (8420-26600)	12002 (6830-22400)	5117 (3580-6030)
Chromium	0.5 (0.5-0.5)	0.5 (0.5-0.5)	0.5 (0.5-0.5)	0.7 (0.5-1.3)	0.5 (0.5-0.5)
Cobalt	0.6 (0.5-2)	0.5 (0.5-0.5)	0.5 (0.5-0.5)	0.5 (0.5-0.5)	0.5 (0.5-0.5)
Copper	4.18 (1.5-6.97)	2.6 (1.05-4.35)	6.57 (3.75-10.8)	10.39 (4.21-19.6)	2.58 (1.82-3.99)
Iron	36.8 (16.6-68.2)	49.5 (18.2-99.1)	207.4 (71.3-442)	205.2 (39.8-643)	48.4 (45-50.4)
Lead	0.045 (0.025-0.18)	0.083 (0.025-0.2)	0.048 (0.025-0.11)	0.058 (0.025-0.19)	0.073 (0.025-0.17)
Magnesium	- ¹⁰	-	-	-	-
Manganese	141.8 (22.9-767)	125.4 (8.44-442)	87.1 (39.9-157)	64.9 (35.1-110)	471 (246-684)
Molybdenum	0.399 (0.125-2.13)	1.01 (0.25-2.91)	0.895 (0.125-3)	0.74 (0.41-1.19)	0.745 (0.125-1.35)
Nickel	2.3 (0.5-9)	0.9 (0.5-3.2)	2.8 (0.5-5.2)	2.0 (0.5-3.4)	0.8 (0.5-1.4)
Potassium	7298 (2970-13800)	8004 (3340-12500)	17414 (12100-20900)	21692 (6660-36700)	12063 (6790-16200)
Selenium	0.032 (0.025-0.13)	0.025 (0.025-0.025)	0.063 (0.025-0.18)	0.045 (0.025-0.09)	0.025 (0.025-0.025)
Silver	0.5 (0.5-0.5)	0.5 (0.5-0.5)	0.5 (0.5-0.5)	0.5 (0.5-0.5)	0.5 (0.5-0.5)
Sodium	57 (50-239)	55 (50-142)	402 (50-2070)	50 (50-50)	248 (50-525)
Strontium	38.2 (12.2-81.3)	21.6 (9.6-61.4)	81.0 (23.7-180)	61.0 (22-105)	33.3 (21-53.8)
Tin	-	-	-	-	-
Zinc	77.2 (7.18-226)	17.93 (8.94-29.7)	17.3 (10.5-27.8)	24.5 (14.8-34.5)	29.9 (12-54.6)

⁵ n = 37

⁶ n = 17

⁷ n = 7

⁸ n = 5

⁹ n = 3

¹⁰ - = not analyzed

**Table 5-3:
Background Concentration of Total Trace Elements in Vegetation Sampled in June and August 1995 Compared to Other Mines in BC**

Trace Element	Total Concentration (mg/kg)					
	Shrub/Tree	Grass	Legume	Herb	Sedge	Other Mines in BC
	Mean (min-max) ¹¹	Mean (min-max) ¹²	Mean (min-max) ¹³	Mean (min-max) ¹⁴	Mean (min-max) ¹⁵	Range (Jones et al Draft)
Aluminum	14 (5-106)	21 (5-60)	129 (15-313)	86 (12-439)	8 (5-15)	n/r ¹⁶
Antimony	5 (5-5)	5 (5-5)	5 (5-5)	5 (5-5)	5 (5-5)	n/r
Arsenic	0.035 (0.025-0.21)	0.079 (0.025-0.56)	0.096 (0.025-0.28)	0.036 (0.025-0.12)	0.110 (0.025-0.28)	0.00450 - 20
Barium	4.5 (0.25-38.7)	12.78 (1.5-31.4)	13.61 (0.5-45.3)	7.46 (3.19-15.2)	23.7 (13.4-36.3)	n/r
Beryllium	0.125 (0.125-0.125)	0.125 (0.125-0.125)	0.125 (0.125-0.125)	0.125 (0.125-0.125)	0.125 (0.125-0.125)	n/r
Cadmium	0.40 (0.25-5.56)	0.25 (0.25-0.25)	0.25 (0.25-0.25)	0.25 (0.25-0.25)	0.25 (0.25-0.25)	<0.06 - 17.1
Calcium	9118 (2460-19200)	2931 (1170-4690)	17924 (8420-26600)	9667 (5780-22400)	5117 (3580-6030)	n/r
Chromium	0.5 (0.5-1.5)	0.6 (0.5-2)	0.5 (0.5-0.5)	0.6 (0.5-1.3)	0.5 (0.5-0.5)	n/r
Cobalt	0.6 (0.5-2)	0.5 (0.5-0.5)	0.5 (0.5-0.5)	0.5 (0.5-0.5)	0.5 (0.5-0.5)	n/r
Copper	5.66 (1.5-17.2)	3.86 (1.05-8.56)	7.71 (3.75-16.7)	9.11 (4.21-19.6)	2.58 (1.82-3.99)	<0.1 - 984
Iron	48.5 (16.6-200)	56.6 (18.2-99.1)	204 (71.3-442)	153 (39.8-643)	48.4 (45-50.4)	n/r
Lead	0.091 (0.025-0.65)	0.088 (0.025-0.2)	0.059 (0.025-0.11)	0.102 (0.025-0.3)	0.073 (0.025-0.17)	0.067 - 65
Magnesium	2549 (1250-4200)	1654 (1050-2750)	4875 (4630-5120)	3018 (2310-3550)	- ¹⁷	n/r
Manganese	140.2 (18.1-767)	125.4 (8.44-442)	93.9 (39.9-166)	59.0 (22.1-110)	471 (246-684)	n/r
Mercury	-	-	-	-	-	0.005 - 2.1
Molybdenum	0.371 (0.125-2.13)	1.39 (0.25-5.5)	0.913 (0.125-3)	0.798 (0.25-1.55)	0.745 (0.125-1.35)	n/r
Nickel	2.6 (0.5-9)	1.2 (0.5-4.2)	2.7 (0.5-5.2)	2.0 (0.5-4.3)	0.8 (0.5-1.4)	0.0 - 11.25
Potassium	8501 (2970-14200)	11930 (3340-32500)	19933 (12100-31800)	27607 (6660-48900)	12063 (6790-16200)	n/r
Selenium	1.658 (0.025-5)	1.156 (0.025-5)	1.160 (0.025-5)	2.247 (0.025-5)	0.025 (0.025-0.025)	0.04 - 18.7
Silver	0.5 (0.5-0.5)	0.5 (0.5-0.5)	0.5 (0.5-0.5)	0.5 (0.5-0.5)	0.5 (0.5-0.5)	n/r
Sodium	54 (50-239)	57 (50-142)	347 (50-2070)	50 (50-50)	248 (50-525)	n/r
Strontium	34.6 (9.08-81.3)	18.8 (5.3-61.4)	89.4 (23.7-180)	47.0 (17.8-105)	33.3 (21-53.8)	n/r

¹¹ n = 55, except for Magnesium and Tin (n = 18)

¹² n = 22, except for Magnesium and Tin (n = 5)

¹³ n = 9, except for Magnesium and Tin (n = 2)

¹⁴ n = 9, except for Magnesium and Tin (n = 4)

¹⁵ n = 3

¹⁶ n/r = not reported

¹⁷ - = not analyzed

Trace Element	Total Concentration (mg/kg)					
	Shrub/Tree	Grass	Legume	Herb	Sedge	Other Mines in BC
	Mean (min-max) ¹¹	Mean (min-max) ¹²	Mean (min-max) ¹³	Mean (min-max) ¹⁴	Mean (min-max) ¹⁵	Range (Jones et al Draft)
Tin	7.5 (7.5-7.5)	7.5 (7.5-7.5)	7.5 (7.5-7.5)	7.5 (7.5-7.5)	-	n/r
Zinc	82.88 (7.18-226)	19.58 (8.94-31.9)	20.2 (10.5-38.7)	27.7 (14.8-40.9)	29.9 (12-54.6)	5.1 - 365

**Table 5-4:
Background Concentration of Total Trace Elements in the Leaves and Stems of
Shrubs/Trees Sampled in August 1995**

Trace Element	Total Concentration (mg/kg)					
	Leaves			Stems		
	Mean ¹⁸	Min	Max	Mean ¹⁸	Min	Max
Aluminum	9	5	18	7	5	11
Antimony	5	5	5	5	5	5
Arsenic	0.052	0.025	0.21	0.051	0.025	0.18
Barium	2.48	0.71	8.48	2.92	0.71	11.1
Beryllium	0.125	0.125	0.125	0.125	0.125	0.125
Cadmium	0.25	0.25	0.25	0.25	0.25	0.25
Calcium	12894	6650	17100	5417	3360	6900
Chromium	0.5	0.5	0.5	0.5	0.5	0.5
Cobalt	0.6	0.5	1	0.5	0.5	0.5
Copper	3.72	1.5	5.28	4.66	1.81	6.97
Iron	44.2	28	63.5	26.3	20.6	34.3
Lead	0.045	0.025	0.13	0.051	0.025	0.18
Magnesium	- ¹⁹	-	-	-	-	-
Manganese	194.3	73	661	96.5	30.6	230
Molybdenum	0.369	0.125	0.65	0.153	0.125	0.25
Nickel	1.8	0.5	5.9	1.5	0.5	4.5
Potassium	8666	3290	13800	5238	3280	7700
Selenium	0.025	0.025	0.025	0.025	0.025	0.025
Silver	0.5	0.5	0.5	0.5	0.5	0.5
Sodium	71	50	239	56	50	104
Strontium	48.5	14.9	71.8	28.4	12.8	40.1
Tin	-	-	-	-	-	-
Zinc	95.0	21.8	226	98.1	43.1	176

¹⁸ n = 9

¹⁹ - = not analyzed

**Table 5-5:
The Plant Species that were Sampled in the Mine Site Area and the Corresponding
General Categories (Hallam Knight Piésold Ltd. 1997).**

Sample	Common Name	Latin Name	Category
Samples Collected in June 1995			
95 - V1	bog willow	<i>Salix pedicellaris</i>	shrub/tree
95 - V2	bog willow	<i>Salix pedicellaris</i>	shrub/tree
95 - V3	meadow willow	<i>Salix petiolaris</i>	shrub/tree
95 - V4	bluejoint	<i>Calamagrostis canadensis</i>	grass
95 - V5	scrub birch	<i>Betula glandulosa</i>	shrub/tree
95 - V6	grey-leaved willow	<i>Salix glauca</i>	shrub/tree
95 - V7	Farr's willow	<i>Salix farriae</i>	shrub/tree
95 - V8	bog willow	<i>Salix pedicellaris</i>	shrub/tree
95 - V9	short-fruited willow	<i>Salix brachycarpa</i>	shrub/tree
95 - V10	scrub birch	<i>Betula glandulosa</i>	shrub/tree
95 - V18	Scouler's willow	<i>Salix scouleriana</i>	shrub/tree
95 - V19	mixed grasses	<i>Dactylis + Festuca rubra</i>	grass
95 - V20	showy aster	<i>Aster conspicuus</i>	herb
95 - V21	white clover	<i>Trifolium repens</i>	legume
95 - V25	sweet clover	<i>Melilotus sp.</i>	legume
95 - V26	timothy	<i>Phleum communis</i>	grass
95 - V27	orchard-grass	<i>Dactylis glomerata</i>	grass
95 - V28	Scouler's willow	<i>Salix scouleriana</i>	shrub/tree
95 - V29	timothy	<i>Phleum communis</i>	grass
95 - V30	scrub birch	<i>Betula glandulosa</i>	shrub/tree
95 - V31	bog willow	<i>Salix pedicellaris</i>	shrub/tree
95 - V32	grey-leaved willow	<i>Salix glauca</i>	shrub/tree
95 - V33	soopolallie	<i>Shepherdia canadensis</i>	shrub/tree
95 - V34	showy aster	<i>Aster conspicuus</i>	herb
95 - V35	nodding onion	<i>Allium cernuum</i>	herb
95 - V36	unidentified aster	<i>Aster sp.</i>	herb
95 - V38	rusty menziesia	<i>Menziesia ferruginea</i>	shrub/tree
95 - V39	soopolallie	<i>Shepherdia canadensis</i>	shrub/tree
95 - V40	trembling aspen	<i>Populus tremuloides</i>	shrub/tree
Samples Collected in August 1995			
95 - 1	spike trisetum	<i>Trisetum spicatum</i>	grass
95 - 2	pasture sagewort	<i>Artemisia frigida</i>	herb
95 - 3	trembling aspen	<i>Populus tremuloides</i>	shrub/tree
95 - 4	bluebunch wheatgrass	<i>Agropyron spicatum</i>	grass
95 - 5	slender wheatgrass	<i>Agropyron trachycaulum</i>	grass
95 - 6	Idaho fescue	<i>Festuca cf idahoensis</i>	grass
95 - 7	sheep fescue	<i>Festuca cf ovina</i>	grass

95 - 8	timber milk-vetch	<i>Astragalus miser</i>	legume
95 - 9	spreading needlegrass	<i>Stipa richardsonii</i>	grass
95 - 10	timber oatgrass	<i>Danthonia intermedia</i>	grass
95 - 11	scrub birch	<i>Betula glandulosa</i>	shrub/tree
95 - 12	Farr's willow	<i>Salix farriar</i>	shrub/tree
95 - 13	prickly rose	<i>Rosa acicularis</i>	shrub/tree
95 - 14	Scouler's willow	<i>Salix scouleriana</i>	shrub/tree
95 - 15	elephant-head lousewort	<i>Pedicularis groenlandica</i>	herb
95 - 16	subalpine fir	<i>Abies lasiocarpa</i>	tree
95 - 17	water sedge	<i>Carex aquatilis</i>	sedge
95 - 18	pussy willow	<i>Salix discolor</i>	shrub/tree
95 - 19	grey-leaved willow	<i>Salix glauca</i>	shrub/tree
95 - 20	red clover	<i>Trifolium pratense</i>	legume
95 - 21	white clover	<i>Trifolium repens</i>	legume
95 - 22	white clover	<i>Trifolium repens</i>	legume
95 - 23	red fescue	<i>Festuca rubra</i>	grass
95 - 24	red fescue	<i>Festuca rubra</i>	grass
95 - 26	Scouler's willow	<i>Salix scouleriana</i>	shrub/tree
95 - 27	soopolallie	<i>Shepherdia canadensis</i>	shrub/tree
95 - 31	water sedge	<i>Carex aquatilis</i>	sedge
95 - 32	pussy willow	<i>Salix cf discolor</i>	shrub/tree
95 - 33	grey-leaved willow	<i>Salix glauca</i>	shrub/tree
95 - 34	variable willow	<i>Salix cf commutata</i>	shrub/tree
95 - 35	spreading needlegrass	<i>Stipa richardsonii</i>	grass
95 - 36	timber oatgrass	<i>Danthonia intermedia</i>	grass
95 - 37	bluebunch wheatgrass	<i>Agropyron spicatum</i>	grass
95 - 38	pinegrass	<i>Calamagrostis rubsecens</i>	grass
95 - 39	soopolallie	<i>Shepherdia canadensis</i>	shrub/tree
95 - 40	prickly rose	<i>Rosa acicularis</i>	shrub/tree
95 - 41	timber milk-vetch	<i>Astragalus miser</i>	legume
95 - 42	fireweed	<i>Epilobium angustifolium</i>	herb
95 - 43	grey-leaved willow	<i>Salix glauca</i>	shrub/tree
95 - 44	Farr's willow	<i>Salix farriar</i>	shrub/tree
95 - 45	Bebb's willow	<i>Salix bebbiana</i>	shrub/tree
95 - 46	scrub birch	<i>Betula glandulosa</i>	shrub/tree
95 - 47	showy aster	<i>Aster conspicuus</i>	herb
95 - 48	arctic lupine	<i>Lupinus arcticus</i>	legume
95 - 49	Maccall's willow	<i>Salix cf maccalliana</i>	shrub/tree
95 - 50	bluejoint	<i>Calamagrostis canadensis</i>	grass
95 - 51	common horsetail	<i>Equisetum arvense</i>	herb
95 - 52	scrub birch	<i>Betula glandulosa</i>	shrub/tree
95 - 53	Maccall's willow	<i>Salix maccalliana</i>	shrub/tree
95-54	grey-leaved willow	<i>Salix glauca</i>	shrub/tree

95-56	Barclay's willow	<i>Salix cf barclayi</i>	shrub/tree
95-57	Farr's willow	<i>Salix farriae</i>	shrub/tree
95-58	water sedge	<i>Carex aquatilis</i>	sedge
95-59	pumpelly brome	<i>Bromus pumpellianus</i>	grass
95-60	willow	<i>Salix sp.</i>	shrub/tree
95-61	spike bentgrass	<i>Agrostis cf exarata</i>	grass
95-62	tufted hairgrass	<i>Deschampsia caespitosa</i>	grass
95-63	Maccall's willow	<i>Salix maccalliana</i>	shrub/tree
95-64	willow	<i>Salix sp.</i>	shrub/tree
95-65	sweet-vetch	<i>Hedysarum sp.</i>	legume

5.6 References

Jones, C.E., L.Y. Salé, B.E. Beck, K. Simpson, and W.A. Price. Draft. A review of trace element uptake by vegetation and animals on undisturbed and mine soils, Canada Centre for Mineral and Energy Technology (CANMET).

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List of Maps

Map 5-1 Sample Site Locations for Trace Elements in Vegetation

Appendix ?

Lab Data for Trace elements in Vegetation