



Industry, Energy and Technology

Mines

**TILL-GEOCHEMISTRY DATA TARGETING
CRITICAL METALS (BASE METALS, PGES, REES, U)
IN THE ALEXIS RIVER VALLEY REGION
(NTS MAP AREAS 13A/10, 14 AND 15),
SOUTHEASTERN LABRADOR**

S. Hashmi

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INTRODUCTION

A humus- and till-sampling survey was completed in the Alexis River Valley region (NTS map areas 13A/10, 14 and 15) in southeastern Labrador during the 2023 field season (Figure 1; Hashmi, 2024). This data release presents the analytical results and summary notes for 76 till samples collected in 2023 and re-analyses of 72 archived till samples collected in 2001 (McCuaig, 2002a, b).

METHODS

SAMPLE COLLECTION

Till samples, weighing approximately 2–3 kg, were collected, along the Trans-Canada Highway (TCH) *via* truck, foot traverse and with helicopter support. Till sampling equipment included a mattock, a shovel and a geological pick. At each site, the sediment face was cleaned,

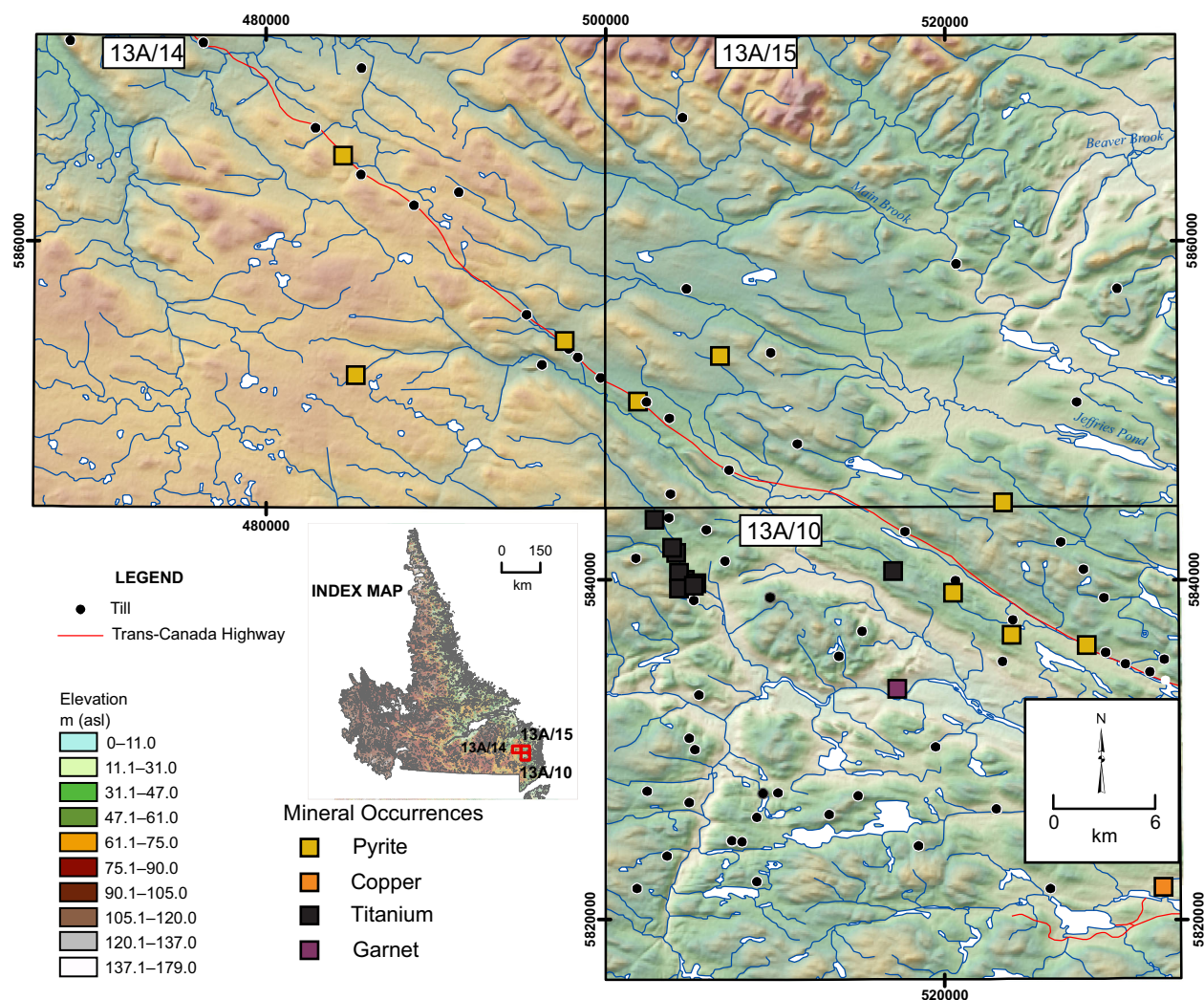


Figure 1. Till sampling sites from 2023 field season in the Alexis River Valley region, underlain by topographic hill shade.

or a pit was dug. Till samples were collected from a depth ranging from a few to tens of centimetres, from B- or BC-horizon soil horizon. Detailed observations and photographs were collected at each site. For information about collection of the 2001 samples, refer to McCuaig (2002a, b).

SAMPLE PREPARATION

The till samples were prepared at the Geological Survey of Newfoundland and Labrador's (GSNL) laboratory in St. John's before they were submitted for analyses. At the laboratory, the till samples were dried at 55°C, crushed with a rubber mallet to disintegrate clumps of soil and sieved to the <63 µm fraction. The till samples were submitted to the GSNL laboratory and to ALS laboratory in Vancouver. For information about preparation of the 2001 samples, refer to McCuaig (2002a, b).

ANALYTICAL TECHNIQUES

Till samples collected during the 2023 field season were submitted in-house for the following (see Finch *et al.*, 2018):

- 1) Four-acid (hydrochloric acid, hydrofluoric acid, nitric acid and perchloric acid) digestion followed by inductively coupled plasma-optical emission spectrometry (ICP-OES) to determine concentrations of major and trace elements (Ag, Al, As, Ba, Be, Ca, Cd, Ce, Co, Cr, Cu, Dy, Fe, K, La, Li, Mg, Mn, Mo, Na, Nb, Ni, P, Pb, Rb, S, Sc, Sr, Ti, V, Y, Zn and Zr). This analysis is indicated by element suffix "2". Note that Ag is digested by nitric acid and determined by ICP-OES and is indicated by element suffix "6";
- 2) Lithium (metaborate) tetraborate fusion followed by ICP-OES and inductively coupled plasma-optical mass spectrometry (ICP-MS) finish. Silicon dioxide, Al₂O₃, Fe₂O₃, FeO, MgO, CaO, Na₂O, K₂O, TiO₂, MnO, P₂O₅, Cr, Ba, Be, Sc and Zr are analyzed by ICP-OES. Gallium, Ge, Rb, Sr, Y, Nb, Sn, Cs, La, Ce, Pr, Nd, Sm, Eu, Tb, Gd, Dy, Ho, Er, Tm, Yb, Lu, Hf, Ta, W, Tl, Bi, Th and U are analyzed by ICP-MS. This analysis is indicated by element suffix "9";
- 3) Loss on ignition (LOI) *via* gravimetry to determine percentage of organic matter and written as "LOI"; and
- 4) A 4-acid digest followed by ICP-MS to determine major and trace elements (Ag, As, Ba, Bi, Cd, Ce, Co, Cs, Cu, Dy, Er, Eu, Ga, Gd, Ge, Hf, Ho, La, Lu, Mo, Nb, Nd, Ni, Pb, Pr, Rb, Sb, Sc, Sm, Sn, Sr, Tb, Th, Tl, Tm, U, V, W, Y, Yb and Zn). This analysis is indicated by element suffix "30".

Till samples collected during the 2023 field season were also submitted to ALS Canada Ltd. for the following analyses:

- 1) Four-acid, near-total digestion on a 0.25 g aliquot followed by ICP-MS and inductively coupled plasma-atomic emission spectrometry (ICP-AES) finish (ALS Code: ME-

MS61L). This method includes ultra-trace detection for REEs (ALS Code: MS61L-REE) using a multi-acid digestion (HF-HNO₃-HClO₄ and HCl) followed by ICP-MS analysis; and

- 2) Platinum-group element (PGE) and Au detection on a 50 g aliquot by fire assay with an ICP-MS finish (ALS Code: PGM-MS24).

Additionally, the archived till samples were submitted to ALS Canada Ltd. for the following:

- 1) Four-acid, near-total digestion on a 0.25 g aliquot followed by ICP-MS and ICP-AES finish (ALS Code: ME-MS61L). This method includes ultra-trace detection for REEs (ALS Code: MS61L-REE) using a multi-acid digestion (HF-HNO₃-HClO₄ and HCl) followed by ICP-MS analysis;
- 2) Platinum-group element and Au detection on a 50 g aliquot by fire assay with an ICP-MS finish (ALS Code: PGM-MS24); and
- 3) *Aqua regia* digestion on a 50 g aliquot analyzed by ICP-MS for Au (acid extractable) plus 52 elements (ALS Code: AuME-ST44).

QUALITY ASSURANCE AND QUALITY CONTROL

Quality control measures in the field included thorough cleaning of sampling equipment between sample sites to prevent cross-contamination and written and photographic documentation at each site. Field duplicates were collected at a frequency of one field duplicate per 12 samples to determine site variability. Three laboratory duplicates for till samples were prepared and inserted at GSNL and two additional laboratory duplicates were prepared and inserted by ALS to quantify instrumental precision.

Accuracy was measured using certified reference materials (CRMs; MRCA-21: an in-house standard at ALS Geochemistry; OREAS 46: basal till derived from Archean greenstone belt and felsic intrusive rocks near Chibougamau, Quebec; OREAS 920 and 922a: Cu-ore hosted in CSA siltstone from New South Wales, Australia, comprising chalcopyrite, pyrrhotite, pyrite, sphalerite, galena, bornite, cubanite and Fe-rich chlorite; OREAS 101b:a U-ore from the Mt. Gee uranium prospect in South Australia). Eight CRMs were inserted. Except for a single sample run for Fe that had concentration lower than the “lower bound” in one CRM (OREAS 101b), and single sample runs for Ge (OREAS 922), Se (OREAS 46) and W (MRCA-21) that had concentrations higher than the “upper bound”, all other element concentrations remained within the predefined upper and lower bounds.

RESULTS

The following information is presented in Appendices A (GSNL laboratory analyses) and B (ALS Canada Ltd. analyses): sample number, year, location, elevation, horizon, depth, map unit, additional notes on location, and the elements analyzed. Major elements are reported in wt. %

whereas minor and trace elements are reported in ppm. Negative values represent results below the reporting limit. A value of “-9” indicates that a sample was not analyzed for that element. Different analytical procedures are indicated by suffixes; refer to Table 1 for a list of analytical methods for each element and associated abbreviations in column headers (*see above*). All location data is projected in Universal Transverse Mercator (UTM) easting and northing, zone 21, NAD 27 datum.

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Table 1. Analytical information pertaining to till samples

Element	Laboratory	Method	Abbreviation/ suffix	Appendix	Unit	Lower detection limit (DL)	Samples below DL	Minimum	Maximum	Samples analyzed
Ag	ALS Canada	AuME-ST44	ST4	B	ppm	0.001	0	0.004	0.095	36
Al	ALS Canada	AuME-ST44	ST4	B	%	0.01	0	0.73	4.35	36
As	ALS Canada	AuME-ST44	ST4	B	ppm	0.01	0	0.03	8.47	36
Au	ALS Canada	AuME-ST44	ST4	B	ppm	0.0001	0	0.0001	0.0246	36
B	ALS Canada	AuME-ST44	ST4	B	ppm	2	6	2	4	36
Ba	ALS Canada	AuME-ST44	ST4	B	ppm	0.05	0	16.7	426.0	36
Be	ALS Canada	AuME-ST44	ST4	B	ppm	0.005	0	0.156	2.610	36
Bi	ALS Canada	AuME-ST44	ST4	B	ppm	0.0005	0	0.0255	0.1210	36
Ca	ALS Canada	AuME-ST44	ST4	B	%	0.01	0	0.10	0.62	36
Cd	ALS Canada	AuME-ST44	ST4	B	ppm	0.001	0	0.011	0.424	36
Ce	ALS Canada	AuME-ST44	ST4	B	ppm	0.001	0	24.4	246.0	36
Co	ALS Canada	AuME-ST44	ST4	B	ppm	0.001	0	1.24	46.20	36
Cr	ALS Canada	AuME-ST44	ST4	B	ppm	0.01	0	16.3	107.0	36
Cs	ALS Canada	AuME-ST44	ST4	B	ppm	0.001	0	0.341	5.060	36
Cu	ALS Canada	AuME-ST44	ST4	B	ppm	0.01	0	6.97	150.5	36
Fe	ALS Canada	AuME-ST44	ST4	B	%	0.001	0	0.86	5.43	36
Ga	ALS Canada	AuME-ST44	ST4	B	ppm	0.004	0	2.35	13.95	36
Ge	ALS Canada	AuME-ST44	ST4	B	ppm	0.005	0	0.055	0.290	36
Hf	ALS Canada	AuME-ST44	ST4	B	ppm	0.002	0	0.013	0.158	36
Hg	ALS Canada	AuME-ST44	ST4	B	ppm	0.002	0	0.007	0.139	36
In	ALS Canada	AuME-ST44	ST4	B	ppm	0.005	0	0.010	0.070	36
K	ALS Canada	AuME-ST44	ST4	B	%	0.01	0	0.02	1.05	36
La	ALS Canada	AuME-ST44	ST4	B	ppm	0.002	0	15.05	127.00	36
Li	ALS Canada	AuME-ST44	ST4	B	ppm	0.1	0	2.9	33.7	36
Mg	ALS Canada	AuME-ST44	ST4	B	%	0.01	0	0.08	1.52	36
Mn	ALS Canada	AuME-ST44	ST4	B	ppm	0.1	0	45.3	398	36
Mo	ALS Canada	AuME-ST44	ST4	B	ppm	0.002	0	0.225	11.500	36
Na	ALS Canada	AuME-ST44	ST4	B	%	0.001	0	0.009	0.081	36
Nb	ALS Canada	AuME-ST44	ST4	B	ppm	0.002	0	0.174	4.160	36
Ni	ALS Canada	AuME-ST44	ST4	B	ppm	0.02	0	3.57	117.5	36
P	ALS Canada	AuME-ST44	ST4	B	%	0.0005	0	0.0183	0.2310	36
Pb	ALS Canada	AuME-ST44	ST4	B	ppm	0.005	0	1.80	273.00	36
Pd	ALS Canada	AuME-ST44	ST4	B	ppm	0.001	20	0.001	0.041	36
Pt	ALS Canada	AuME-ST44	ST4	B	ppm	0.001	32	0.001	0.002	36
Rb	ALS Canada	AuME-ST44	ST4	B	ppm	0.005	0	2.83	106.00	36
Re	ALS Canada	AuME-ST44	ST4	B	ppm	0.0002	32	0.0002	0.0003	36
S	ALS Canada	AuME-ST44	ST4	B	%	0.002	1	0.005	0.052	36
Sb	ALS Canada	AuME-ST44	ST4	B	ppm	0.002	0	0.008	0.186	36
Sc	ALS Canada	AuME-ST44	ST4	B	ppm	0.005	0	2.53	12.25	36
Se	ALS Canada	AuME-ST44	ST4	B	ppm	0.002	0	0.019	0.543	36
Sn	ALS Canada	AuME-ST44	ST4	B	ppm	0.01	0	0.36	2.86	36
Sr	ALS Canada	AuME-ST44	ST4	B	ppm	0.01	0	6.97	43.90	36
Ta	ALS Canada	AuME-ST44	ST4	B	ppm	0.005	34	0.005	0.019	36
Te	ALS Canada	AuME-ST44	ST4	B	ppm	0.001	0	0.004	0.145	36
Th	ALS Canada	AuME-ST44	ST4	B	ppm	0.0005	0	1.93	23.70	36
Ti	ALS Canada	AuME-ST44	ST4	B	%	0.0001	0	0.0652	0.3720	36
Tl	ALS Canada	AuME-ST44	ST4	B	ppm	0.0005	0	0.0367	0.6810	36
U	ALS Canada	AuME-ST44	ST4	B	ppm	0.0005	0	0.370	5.870	36
V	ALS Canada	AuME-ST44	ST4	B	ppm	0.05	0	20.8	117.0	36
W	ALS Canada	AuME-ST44	ST4	B	ppm	0.001	0	0.035	0.531	36
Y	ALS Canada	AuME-ST44	ST4	B	ppm	0.001	0	4.98	113.00	36
Zn	ALS Canada	AuME-ST44	ST4	B	ppm	0.1	0	6.2	205.0	36
Zr	ALS Canada	AuME-ST44	ST4	B	ppm	0.01	0	0.68	5.52	36
Ag	ALS Canada	ME-MS61L	MSL	B	ppm	0.002	0	0.007	0.234	148
Al	ALS Canada	ME-MS61L	MSL	B	%	0.01	0	5.91	11.20	148
As	ALS Canada	ME-MS61L	MSL	B	ppm	0.02	0	0.32	10.55	148
Ba	ALS Canada	ME-MS61L	MSL	B	ppm	1	0	257	1480	148
Be	ALS Canada	ME-MS61L	MSL	B	ppm	0.02	0	0.78	4.21	148
Bi	ALS Canada	ME-MS61L	MSL	B	ppm	0.002	0	0.032	9.090	148
Ca	ALS Canada	ME-MS61L	MSL	B	%	0.01	0	0.53	4.03	148
Cd	ALS Canada	ME-MS61L	MSL	B	ppm	0.005	0	0.044	0.551	148
Ce	ALS Canada	ME-MS61L	MSL	B	ppm	0.01	0	36.5	379.0	148

Table 1. Continued

Element	Laboratory	Method	Abbreviation/ suffix	Appendix	Unit	Lower detection limit (DL)	Samples below DL	Minimum	Maximum	Samples analyzed
Co	ALS Canada	ME-MS61L	MSL	B	ppm	0.005	0	4.05	55.10	148
Cr	ALS Canada	ME-MS61L	MSL	B	ppm	0.3	0	35.3	222.0	148
Cs	ALS Canada	ME-MS61L	MSL	B	ppm	0.01	0	0.47	6.92	148
Cu	ALS Canada	ME-MS61L	MSL	B	ppm	0.02	0	3.9	264.0	148
Fe	ALS Canada	ME-MS61L	MSL	B	%	0.002	0	2.54	10.65	148
Ga	ALS Canada	ME-MS61L	MSL	B	ppm	0.05	0	12.15	36.30	148
Ge	ALS Canada	ME-MS61L	MSL	B	ppm	0.05	0	0.13	0.63	148
Hf	ALS Canada	ME-MS61L	MSL	B	ppm	0.004	0	1.76	11.25	148
In	ALS Canada	ME-MS61L	MSL	B	ppm	0.005	0	0.028	0.233	148
K	ALS Canada	ME-MS61L	MSL	B	%	0.01	0	0.63	3.30	148
La	ALS Canada	ME-MS61L	MSL	B	ppm	0.005	0	19.5	180.0	148
Li	ALS Canada	ME-MS61L	MSL	B	ppm	0.2	0	4.8	54.5	148
Mg	ALS Canada	ME-MS61L	MSL	B	%	0.01	0	0.31	3.85	148
Mn	ALS Canada	ME-MS61L	MSL	B	ppm	0.2	0	220	1140	148
Mo	ALS Canada	ME-MS61L	MSL	B	ppm	0.02	0	0.24	12.65	148
Na	ALS Canada	ME-MS61L	MSL	B	%	0.001	0	0.54	2.68	148
Nb	ALS Canada	ME-MS61L	MSL	B	ppm	0.005	0	5.08	48.40	148
Ni	ALS Canada	ME-MS61L	MSL	B	ppm	0.08	0	6.68	147.00	148
P	ALS Canada	ME-MS61L	MSL	B	%	0.001	0	0.036	0.598	148
Pb	ALS Canada	ME-MS61L	MSL	B	ppm	0.01	0	6.38	286.00	148
Rb	ALS Canada	ME-MS61L	MSL	B	ppm	0.02	0	20.5	209.0	148
Re	ALS Canada	ME-MS61L	MSL	B	ppm	0.0004	0	0.0004	0.0015	148
S	ALS Canada	ME-MS61L	MSL	B	%	0.01	0	0.01	0.13	148
Sb	ALS Canada	ME-MS61L	MSL	B	ppm	0.02	0	0.02	0.34	148
Sc	ALS Canada	ME-MS61L	MSL	B	ppm	0.01	0	9.02	25.40	148
Se	ALS Canada	ME-MS61L	MSL	B	ppm	0.006	0	0.027	2.410	148
Sn	ALS Canada	ME-MS61L	MSL	B	ppm	0.02	0	0.81	8.29	148
Sr	ALS Canada	ME-MS61L	MSL	B	ppm	0.02	0	92.7	496.0	148
Ta	ALS Canada	ME-MS61L	MSL	B	ppm	0.01	0	0.26	6.63	148
Te	ALS Canada	ME-MS61L	MSL	B	ppm	0.005	0	0.005	0.266	148
Th	ALS Canada	ME-MS61L	MSL	B	ppm	0.004	0	3.01	71.60	148
Ti	ALS Canada	ME-MS61L	MSL	B	%	0.001	0	0.214	1.730	148
Tl	ALS Canada	ME-MS61L	MSL	B	ppm	0.002	0	0.117	1.045	148
U	ALS Canada	ME-MS61L	MSL	B	ppm	0.01	0	0.65	9.45	148
V	ALS Canada	ME-MS61L	MSL	B	ppm	0.1	0	57.3	202.0	148
W	ALS Canada	ME-MS61L	MSL	B	ppm	0.008	0	0.187	2.190	148
Y	ALS Canada	ME-MS61L	MSL	B	ppm	0.01	0	11.0	152.5	148
Zn	ALS Canada	ME-MS61L	MSL	B	ppm	0.2	0	26.0	235.0	148
Dy	ALS Canada	MS61L-REE	MSR	B	ppm	0.005	0	2.02	21.60	148
Er	ALS Canada	MS61L-REE	MSR	B	ppm	0.004	0	1.08	12.50	148
Eu	ALS Canada	MS61L-REE	MSR	B	ppm	0.004	0	0.89	5.74	148
Gd	ALS Canada	MS61L-REE	MSR	B	ppm	0.005	0	2.47	27.80	148
Ho	ALS Canada	MS61L-REE	MSR	B	ppm	0.002	0	0.38	4.28	148
Lu	ALS Canada	MS61L-REE	MSR	B	ppm	0.002	0	0.151	1.740	148
Nd	ALS Canada	MS61L-REE	MSR	B	ppm	0.005	0	17.7	186.0	148
Pr	ALS Canada	MS61L-REE	MSR	B	ppm	0.004	0	4.7	46.3	148
Sm	ALS Canada	MS61L-REE	MSR	B	ppm	0.004	0	3.3	33.5	148
Tb	ALS Canada	MS61L-REE	MSR	B	ppm	0.002	0	0.342	3.700	148
Tm	ALS Canada	MS61L-REE	MSR	B	ppm	0.002	0	0.146	1.770	148
Yb	ALS Canada	MS61L-REE	MSR	B	ppm	0.004	0	0.96	10.95	148
Zr	ALS Canada	MS61L-REE	MSR	B	ppm	0.1	0	65.6	418.0	148
Au	ALS Canada	PGM-MS24	MS2	B	ppm	0.001	0	0.001	0.047	128
Pd	ALS Canada	PGM-MS24	MS2	B	ppm	0.001	22	0.001	0.043	128
Pt	ALS Canada	PGM-MS24	MS2	B	ppm	0.0005	5	0.0005	0.0317	128
Ag30	GSNL	4A-ICP-MS	30	A	ppm	0.2	73	0.3	0.3	76
As30	GSNL	4A-ICP-MS	30	A	ppm	0.2	0	1.4	3.8	76
Ba30	GSNL	4A-ICP-MS	30	A	ppm	1	0	275	1477	76
Bi30	GSNL	4A-ICP-MS	30	A	ppm	0.2	0	-0.2	-0.2	76
Cd30	GSNL	4A-ICP-MS	30	A	ppm	0.1	1	0.1	0.3	76
Ce30	GSNL	4A-ICP-MS	30	A	ppm	1	0	60	326	76
Co30	GSNL	4A-ICP-MS	30	A	ppm	0.5	0	4.4	33.8	76
Cs30	GSNL	4A-ICP-MS	30	A	ppm	0.1	0	0.7	4.8	76

Table 1. Continued

Element	Laboratory	Method	Abbreviation/ suffix	Appendix	Unit	Lower detection limit (DL)	Samples below DL	Minimum	Maximum	Samples analyzed
Cu30	GSNL	4A-ICP-MS	30	A	ppm	1	2	2	78	76
Dy30	GSNL	4A-ICP-MS	30	A	ppm	0.1	0	3.2	16.2	76
Er30	GSNL	4A-ICP-MS	30	A	ppm	0.1	0	1.7	9.3	76
Eu30	GSNL	4A-ICP-MS	30	A	ppm	0.1	0	1.4	3.4	76
Ga30	GSNL	4A-ICP-MS	30	A	ppm	0.5	0	14.3	34.1	76
Gd30	GSNL	4A-ICP-MS	30	A	ppm	0.1	0	4.3	16.0	76
Ge30	GSNL	4A-ICP-MS	30	A	ppm	0.2	0	0.4	1.5	76
Hf30	GSNL	4A-ICP-MS	30	A	ppm	0.2	0	2.4	8.6	76
Ho30	GSNL	4A-ICP-MS	30	A	ppm	0.1	0	0.6	3.2	76
La30	GSNL	4A-ICP-MS	30	A	ppm	1	0	24	104	76
Lu30	GSNL	4A-ICP-MS	30	A	ppm	0.1	0	0.2	1.2	76
Mo30	GSNL	4A-ICP-MS	30	A	ppm	0.5	6	0.5	2.1	76
Nb30	GSNL	4A-ICP-MS	30	A	ppm	0.5	0	12.1	50.1	76
Nd30	GSNL	4A-ICP-MS	30	A	ppm	0.1	0	23.4	93.3	76
Ni30	GSNL	4A-ICP-MS	30	A	ppm	0.5	0	7.2	93.6	76
Pb30	GSNL	4A-ICP-MS	30	A	ppm	0.2	0	11.9	27.4	76
Pr30	GSNL	4A-ICP-MS	30	A	ppm	0.1	0	6.1	24.3	76
Rb30	GSNL	4A-ICP-MS	30	A	ppm	0.5	0	22.0	124.4	76
Sb30	GSNL	4A-ICP-MS	30	A	ppm	0.1	35	0.1	0.2	76
Se30	GSNL	4A-ICP-MS	30	A	ppm	4.0	68	4.1	9.0	76
Sm30	GSNL	4A-ICP-MS	30	A	ppm	0.1	0	4.5	16.7	76
Sn30	GSNL	4A-ICP-MS	30	A	ppm	0.1	0	1.4	6.3	76
Sr30	GSNL	4A-ICP-MS	30	A	ppm	1	0	93	536	76
Ta30	GSNL	4A-ICP-MS	30	A	ppm	0.1	0	0.8	2.7	76
Tb30	GSNL	4A-ICP-MS	30	A	ppm	0.1	0	0.5	2.2	76
Th30	GSNL	4A-ICP-MS	30	A	ppm	0.2	0	5.5	72.9	76
Ti30	GSNL	4A-ICP-MS	30	A	ppm	0.2	1	0.2	0.8	76
Tm30	GSNL	4A-ICP-MS	30	A	ppm	0.1	0	0.2	1.4	76
U30	GSNL	4A-ICP-MS	30	A	ppm	0.2	0	0.9	9.1	76
V30	GSNL	4A-ICP-MS	30	A	ppm	1	0	78	192	76
W30	GSNL	4A-ICP-MS	30	A	ppm	0.2	0	0.3	1.5	76
Y30	GSNL	4A-ICP-MS	30	A	ppm	0.5	0	15.3	71.1	76
Yb30	GSNL	4A-ICP-MS	30	A	ppm	0.1	0	1.7	9.0	76
Zn30	GSNL	4A-ICP-MS	30	A	ppm	3	0	27	102	76
Zr30	GSNL	4A-ICP-MS	30	A	ppm	0.5	0	88.4	312.4	76
Ag6	GSNL	4A-ICP-OES	6	A	ppm	0.1	75	-0.1	0.3	76
Al2	GSNL	4A-ICP-OES	2	A	%	0.01	0	7.16	10.89	76
As2	GSNL	4A-ICP-OES	2	A	ppm	1	3	1	3	76
Ba2	GSNL	4A-ICP-OES	2	A	ppm	1	0	262	1396	76
Be2	GSNL	4A-ICP-OES	2	A	ppm	0.1	0	1.3	2.7	76
Ca2	GSNL	4A-ICP-OES	2	A	%	0.01	0	0.51	2.75	76
Cd2	GSNL	4A-ICP-OES	2	A	ppm	0.1	0	0.1	0.3	76
Ce2	GSNL	4A-ICP-OES	2	A	ppm	5	0	51	265	76
Co2	GSNL	4A-ICP-OES	2	A	ppm	1	0	5	35	76
Cr2	GSNL	4A-ICP-OES	2	A	ppm	1	0	48	171	76
Cu2	GSNL	4A-ICP-OES	2	A	ppm	1	0	4	85	76
Dy2	GSNL	4A-ICP-OES	2	A	ppm	0.5	0	2.7	12.8	76
Fe2	GSNL	4A-ICP-OES	2	A	%	0.01	0	3.91	10.29	76
K2	GSNL	4A-ICP-OES	2	A	%	0.01	0	0.60	2.99	76
La2	GSNL	4A-ICP-OES	2	A	ppm	1	0	22	97	76
Li2	GSNL	4A-ICP-OES	2	A	ppm	0.1	0	5.7	28.0	76
LOI	GSNL	Gravimetry	LOI	A	%	0.1	0	1.7	42.7	76
Bi9	GSNL	ICP-MS-FUS	9	A	ppm	0.5	76	-0.5	-0.5	76
Ce9	GSNL	ICP-MS-FUS	9	A	ppm	0.5	0	47.9	285.2	76
Cs9	GSNL	ICP-MS-FUS	9	A	ppm	0.5	0	1.3	3.8	76
Dy9	GSNL	ICP-MS-FUS	9	A	ppm	0.1	0	3.0	14.9	76
Er9	GSNL	ICP-MS-FUS	9	A	ppm	0.05	0	1.93	9.59	76
Eu9	GSNL	ICP-MS-FUS	9	A	ppm	0.05	0	1.26	2.88	76
Ga9	GSNL	ICP-MS-FUS	9	A	ppm	1	0	12	30	76
Gd9	GSNL	ICP-MS-FUS	9	A	ppm	0.1	0	3.4	12.2	76
Ge9	GSNL	ICP-MS-FUS	9	A	ppm	1	2	1	2	76
Hf9	GSNL	ICP-MS-FUS	9	A	ppm	0.1	0	6.0	25.0	76

Table 1. Continued

Element	Laboratory	Method	Abbreviation/ suffix	Appendix	Unit	Lower detection limit (DL)	Samples below DL	Minimum	Maximum	Samples analyzed
Ho9	GSNL	ICP-MS-FUS	9	A	ppm	0.05	0	0.64	3.14	76
La9	GSNL	ICP-MS-FUS	9	A	ppm	0.5	0	20.9	95.5	76
Lu9	GSNL	ICP-MS-FUS	9	A	ppm	0.01	0	0.32	13.57	76
Nb9	GSNL	ICP-MS-FUS	9	A	ppm	0.1	0	7.1	42.3	76
Nd9	GSNL	ICP-MS-FUS	9	A	ppm	0.2	0	22.1	92.5	76
Pr9	GSNL	ICP-MS-FUS	9	A	ppm	0.1	0	5.4	23.3	76
Rb9	GSNL	ICP-MS-FUS	9	A	ppm	1	0	18	102	76
Sm9	GSNL	ICP-MS-FUS	9	A	ppm	0.1	0	4.0	16.4	76
Sn9	GSNL	ICP-MS-FUS	9	A	ppm	1	0	1	6	76
Sr9	GSNL	ICP-MS-FUS	9	A	ppm	1	0	82	460	76
Ta9	GSNL	ICP-MS-FUS	9	A	ppm	0.05	0	0.32	2.30	76
Tb9	GSNL	ICP-MS-FUS	9	A	ppm	0.05	0	0.49	1.98	76
Th9	GSNL	ICP-MS-FUS	9	A	ppm	0.05	0	5.06	69.64	76
Ti9	GSNL	ICP-MS-FUS	9	A	ppm	0.1	76	-0.1	-0.1	76
Tm9	GSNL	ICP-MS-FUS	9	A	ppm	0.05	0	0.27	1.36	76
U9	GSNL	ICP-MS-FUS	9	A	ppm	0.05	0	1.28	9.30	76
W9	GSNL	ICP-MS-FUS	9	A	ppm	1	65	1	15	76
Y9	GSNL	ICP-MS-FUS	9	A	ppm	1	0	15	73	76
Yb9	GSNL	ICP-MS-FUS	9	A	ppm	0.05	0	1.93	9.15	76
Mg2	GSNL	ICP-OES	2	A	%	0.01	0	0.31	2.20	76
Mn2	GSNL	ICP-OES	2	A	ppm	1	0	260	1042	76
Mo2	GSNL	ICP-OES	2	A	ppm	1	28	1	2	76
Na2	GSNL	ICP-OES	2	A	%	0.01	0	0.48	2.75	76
Nb2	GSNL	ICP-OES	2	A	ppm	1	0	13	46	76
Ni2	GSNL	ICP-OES	2	A	ppm	1	0	13	73	76
P2	GSNL	ICP-OES	2	A	ppm	1	0	311	3303	76
Pb2	GSNL	ICP-OES	2	A	ppm	1	0	5	29	76
Rb2	GSNL	ICP-OES	2	A	ppm	1	0	26	122	76
S2	GSNL	ICP-OES	2	A	ppm	100	9	108	1119	76
Sc2	GSNL	ICP-OES	2	A	ppm	0.1	0	11.8	25.0	76
Sr2	GSNL	ICP-OES	2	A	ppm	1	0	101	548	76
Ti2	GSNL	ICP-OES	2	A	ppm	5	0	3547	10507	76
V2	GSNL	ICP-OES	2	A	ppm	1	0	71	191	76
Y2	GSNL	ICP-OES	2	A	ppm	1	0	14	68	76
Zn2	GSNL	ICP-OES	2	A	ppm	1	0	30	97	76
Zr2	GSNL	ICP-OES	2	A	ppm	1	0	74	254	76
Al ₂ O ₃ 9	GSNL	ICP-OES-FUS	9	A	%	0.01	0	14.13	21.92	76
Ba9	GSNL	ICP-OES-FUS	9	A	ppm	1	0	258	1419	76
Be9	GSNL	ICP-OES-FUS	9	A	ppm	0.2	0	1.1	2.4	76
CaO9	GSNL	ICP-OES-FUS	9	A	%	0.01	0	0.73	4.09	76
Cr9	GSNL	ICP-OES-FUS	9	A	ppm	2	0	36	143	76
Fe ₂ O ₃ 9	GSNL	ICP-OES-FUS	9	A	%	0.01	0	5.54	14.69	76
K ₂ O9	GSNL	ICP-OES-FUS	9	A	%	0.01	0	0.72	3.59	76
MgO9	GSNL	ICP-OES-FUS	9	A	%	0.01	0	0.53	3.81	76
MnO9	GSNL	ICP-OES-FUS	9	A	%	0.001	0	0.032	0.131	76
Na ₂ O9	GSNL	ICP-OES-FUS	9	A	%	0.01	0	0.72	3.66	76
P ₂ O ₅ 9	GSNL	ICP-OES-FUS	9	A	%	0.002	0	0.080	0.763	76
Sc9	GSNL	ICP-OES-FUS	9	A	ppm	1.0	0	10.8	21.5	76
SiO ₂ 9	GSNL	ICP-OES-FUS	9	A	%	0.02	0	20.80	60.71	76
TiO ₂ 9	GSNL	ICP-OES-FUS	9	A	%	0.001	0	0.571	1.703	76
Zr9	GSNL	ICP-OES-FUS	9	A	ppm	5	0	231	924	76
F9	GSNL	ISE	9	A	ppm	5	0	45	738	76

APPENDICES

Appendices A and B are included in the OF_013A_0126 zip folder as digital comma-separated value files (.csv) and Appendix C as a pdf.

APPENDIX A: Till Data from GSNL Laboratory

APPENDIX B: Till Data from ALS Canada Ltd.

APPENDIX C: ALS Canada Ltd. 2023 Geochemistry Schedule of Fees and Services