



**Mines**

**GEOCHEMICAL DATA FROM SUPRACRUSTAL  
AND BASEMENT ROCKS IN THE ANDRE LAKE  
AND MARION LAKE AREAS, LABRADOR  
(NTS MAP AREAS 23I/12 AND 13)**

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**Open File 023I/0103**

**St. John's, Newfoundland  
October, 2019**

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# CONTENTS

	Page
<b>SUMMARY</b> .....	1
<b>NOTES ON DATABASE</b> .....	1
<b>ACKNOWLEDGMENTS</b> .....	2
<b>REFERENCES</b> .....	2
<b>APPENDICES</b> .....	4

## FIGURE

Figure 1. Location map of the study areas .....	1
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## TABLE

Table 1. Analytical methods for geochemical analyses .....	2
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## SUMMARY

This Open File data release presents whole-rock geochemical data for 53 samples collected from the Andre Lake and Marion Lake areas, western Labrador (NTS map areas 23I/12 and 13). Sampling was conducted in 2018 as part of a multi-year project exploring the regional geology and economic potential of the Labrador Trough. Analyzed samples include supracrustal rocks of the Kaniapiskau Supergroup, associated gabbro sills, and various intrusive and metamorphic basement rocks. For information on the regional geology of the Andre Lake area, *see* Butler (2019). Lithological descriptions are in Wardle (1979).

## NOTES ON THE DATABASE

The database presents the results of whole-rock, trace-element and rare-earth-element (REE) geochemical analyses for 53 samples. Sample coordinates, reported as Universal Transverse Mercator (UTM) eastings and northings (zone 20, NAD27), are provided in Appendix A along with brief sample descriptions. The databases are in comma-separated value (.csv) format and are available from the Natural Resources website.

All samples were prepared and analyzed at the Geological Survey of Newfoundland and Labrador's Geochemistry Laboratory in St. John's, following the protocols outlined by Finch *et al.* (2018).

The data are presented in their raw form along with standard and duplicate analyses in a series of appendices. Appendix B presents major-element compositions (in addition to Ba, Be, Cr, Sc, and Zr; *see* Table 1 for element list) determined by Inductively Coupled Plasma Optical Emission

Spectrometry (ICP-OES) following borate fusion. Ferrous iron (FeO) was calculated following the method of Wilson (1960). Volatiles were determined by loss-on-ignition (LOI) at 1000°C. Appendix C presents concentrations of trace elements including As, Cd, Co, Cu, Li, Ni, Pb, Rb, V and Zn, determined by ICP-OES following 4-acid digestion. Appendix D presents rare-earth-element (REE) and additional trace-element concentrations determined by Inductively Coupled Plasma Mass Spectrometry (ICP-MS) following borate fusion. Appendix E presents fluoride (F-) concentrations determined by Ion-selective Electrode determination. Finally, Appendix F presents silver (Ag) concentrations determined by ICP-OES following digestion in nitric acid. Complete details of the analytical procedures described above are provided by Finch *et al.* (2018).

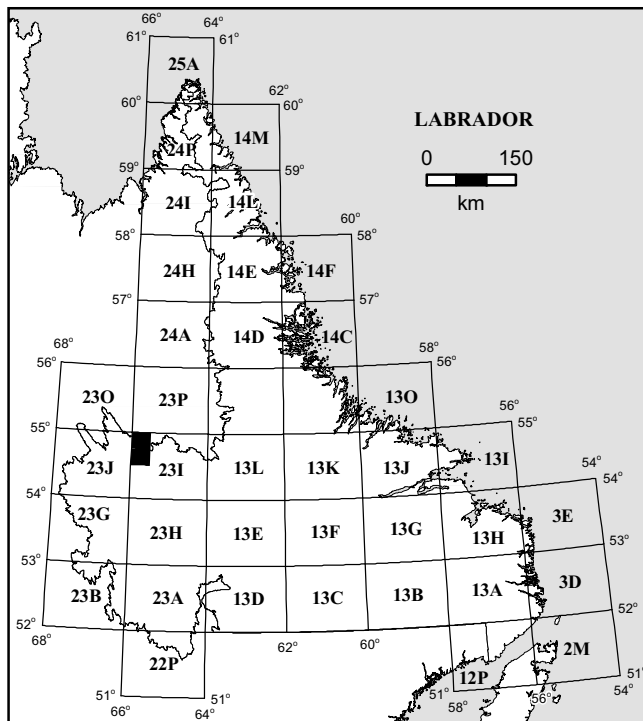


Figure 1. Location map of study areas.

**Table 1.** Analytical methods for geochemical analyses

<b>Appendix</b>	<b>Analysis</b>	<b>Analytical Method</b>	<b>Preparation</b>
B	Al <sub>2</sub> O <sub>3</sub> , Ba, Be, CaO, Cr, Fe <sub>2</sub> O <sub>3</sub> , K <sub>2</sub> O, MgO, MnO, Na <sub>2</sub> O, P <sub>2</sub> O <sub>5</sub> , Sc, SiO <sub>2</sub> , TiO <sub>2</sub> , Zr	ICP-OES	50-50 lithium tetraborate/lithium metaborate fusion
C	As, Cd, Co, Cu, Li, Mo, Ni, Pb, Rb, V, Zn	ICP-OES	Hf-HCl-HNO <sub>3</sub> -HClO <sub>4</sub> digestion
D	Ga, Ge, 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, U	ICP-MS	50-50 lithium tetraborate/lithium metaborate fusion
E	F	ISE	Na <sub>2</sub> CaO <sub>3</sub> and KNO <sub>3</sub> fusion
F	Ag	ICP-OES	HNO <sub>3</sub> digestion

Major elements are reported in weight percent (wt. %), whilst minor and trace elements are reported in parts per million (ppm). Detection limits for each element are provided in the appendices alongside the data. A negative value indicates that the concentration of the specific element was below the detection limit (*e.g.*, -0.01 indicates that the measured value was below the detection limit of 0.01). The code -99 indicates that the sample was not analyzed for that element. Standard and duplicate analyses (of selected samples) are included in each appendix to help readers assess the accuracy and precision of the data.

### ACKNOWLEDGMENTS

Sample preparation and analyses were conducted under the supervision of Chris Finch of the GSNL Geochemistry Laboratory. Special thanks are extended to Wayne Tuttle, Oksana Choulik (McGill Subarctic Research Station), Ben MacDougall and James Conliffe.

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## APPENDICES

Appendixes A–F are available as digital comma-separated files (.csv) through [this link](#).

**Appendix A:** Sample Locations and Descriptions

**Appendix B:** Major-element ICP-OES-FUS Data (standard and duplicate samples)

**Appendix C:** Trace-element ICP-OES 4-Acid Data (standard and duplicate samples)

**Appendix D:** Trace-element ICP-MS-FUS Data (standard and duplicate samples)

**Appendix E:** Fluoride (F-) ISE Data (standard and duplicate samples)

**Appendix F:** Silver (Ag) ICP-OES-HNO<sub>3</sub> Data (standard and duplicate samples)