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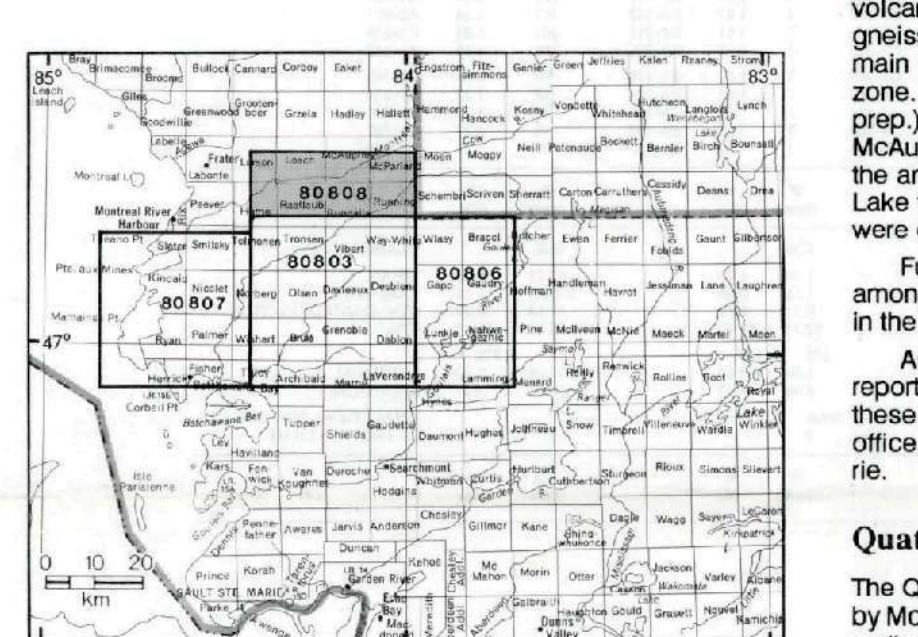
It is recommended that reference to the Content be made in the following form:

Fortescue, J.A.C. and Vida, E.A. 1991. Geochemical survey, Montreal River area; Ontario Geological Survey, Map 80 808, scale 1:50 000.

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"Don't take my finger lockers to potting." (Attributed to Walter B. McCulloch in a 1950 letter to Bill Beer (1979). See Beer (1979), p.457)

INTRODUCTION

The Montreal River geochemical map is a part of a regional geochemical survey of the entire Batchewana greenstone belt... The geochemical map described here is based on results obtained using standardized field, laboratory and data processing methodologies...

METHODOLOGY

The Montreal River geochemical survey description is based on 376 pre-Ambrosia lake sediment samples... The map area is divided into 19 grid squares for the purpose of regional geochemical mapping...

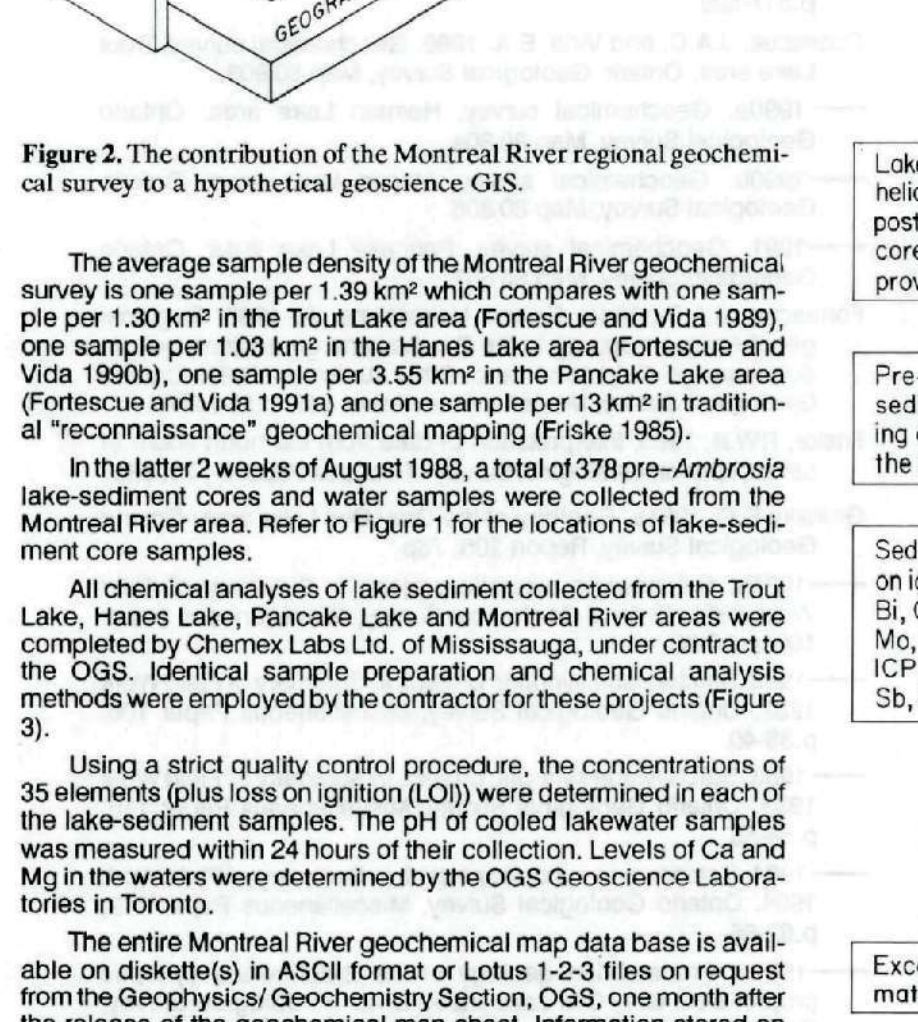


Figure 2. Contribution of the Montreal River regional geochemical survey to a hypothetical geochemical GIS.

The average sample density of the Montreal River geochemical survey is one sample per 1.3 km²... The Montreal River geochemical survey is a part of a regional geochemical survey of the entire Batchewana greenstone belt...

OBJECTIVES

1. To complete a regional-level, mineral resource appraisal, geochemical survey of a 35 km east-west by 15 km north-south area in the north-central part of the Batchewana greenstone belt.
2. To determine the concentrations of 35 elements (Ag, Au, As, Bi, Ba, Be, B, Br, Cd, Co, Cr, Cu, Fe, Ga, Ge, Hf, In, K, Li, Mg, Mn, Ni, Pb, Pt, Sb, Se, Si, Sn, Ti, U, V, W, Zn, Zr) and plus LDI, in order to determine the geochemical signature of the area.
3. Using the standardized format, to provide an interpretation of element patterns that is consistent with the geochemical data base of other regional geochemical surveys.
4. At the detailed level of investigation, to identify geochemical targets of possible importance in mineral exploration.

DESCRIPTION OF THE MONTREAL RIVER AREA

The Montreal River area is a part of the Batchewana greenstone belt some 35 km west of Sudbury, Ontario. The area is located in the north-central part of the Batchewana greenstone belt...

RESULTS AND DISCUSSION

The data obtained with this broadsheet contain details of 17 water and lake-sediment geochemical surveys... The geochemical data are presented in a series of broadsheets...

Geological descriptions of the entire Batchewana greenstone belt, including the Montreal River area, have been compiled in a comprehensive report by Gunkel (1989). Details of geological relationships among the rock types of the Batchewana greenstone belt are described by Gunkel and others (1989). These relationships should be consulted for detailed geological information in the Montreal River area.

The Montreal River map area incorporates the north-central part of the Batchewana greenstone belt, which is bounded by the Chapeau gneiss to the north and the Ramsey gneiss to the south. The area includes the Montreal River, the Chapeau gneiss, the Ramsey gneiss, the Gneiss Domain, the Grey Owl Lake stock, and the Ramsay gneiss.

Figure 1 shows the general geology of the Montreal River area. The Montreal River map area is divided into 19 grid squares for the purpose of regional geochemical mapping. The map area is bounded by the Chapeau gneiss to the north and the Ramsey gneiss to the south.

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DESCRIPTION OF THE GEOCHEMICAL PATTERNS

The Montreal River map area is divided into 19 grid squares for the purpose of regional geochemical mapping. The map area is bounded by the Chapeau gneiss to the north and the Ramsey gneiss to the south.

A GLOBAL DATA SIGNATURE (GDS) FOR ONTARIO

A GDS for Ontario-wide, pre-Ambrosia lake sediments was constructed and described in Fortescue and Vids (1989). To provide a GDS for the Montreal River area, 376 pre-Ambrosia lake sediment samples were analyzed for 35 elements and plus LDI.

A GLOBAL DATA SIGNATURE (GDS) FOR THE MONTREAL RIVER GENERAL GEOLOGY

Figure 4b represents a general geology for the map area compared to the GDS. For the Montreal River area, lake sites and catchments are identified by a simple line drawing. The GDS is a general geology of the map area, and the Montreal River area is shown in a different color.

LAKEWATERS

The pH levels in the Montreal River area range between 4 and 10. The pH levels are generally low, indicating an acidic environment. The water quality is generally poor, with high concentrations of metals and nutrients.

LAKE-SEDIMENT GEOCHEMISTRY

The Montreal River map area is divided into 19 grid squares for the purpose of regional geochemical mapping. The map area is bounded by the Chapeau gneiss to the north and the Ramsey gneiss to the south.

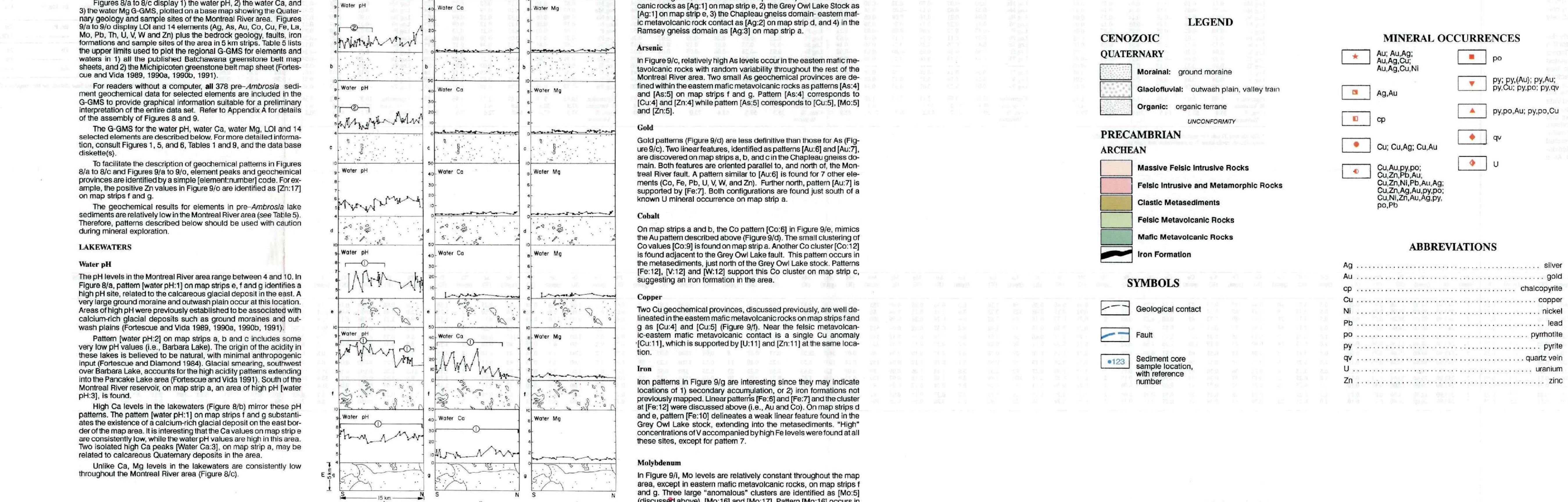
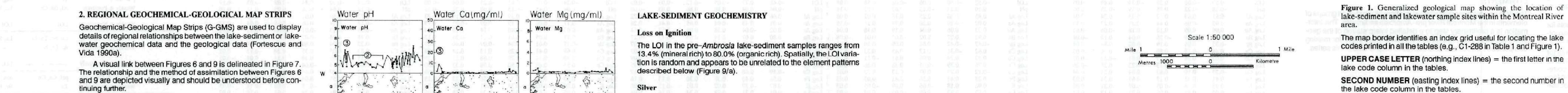
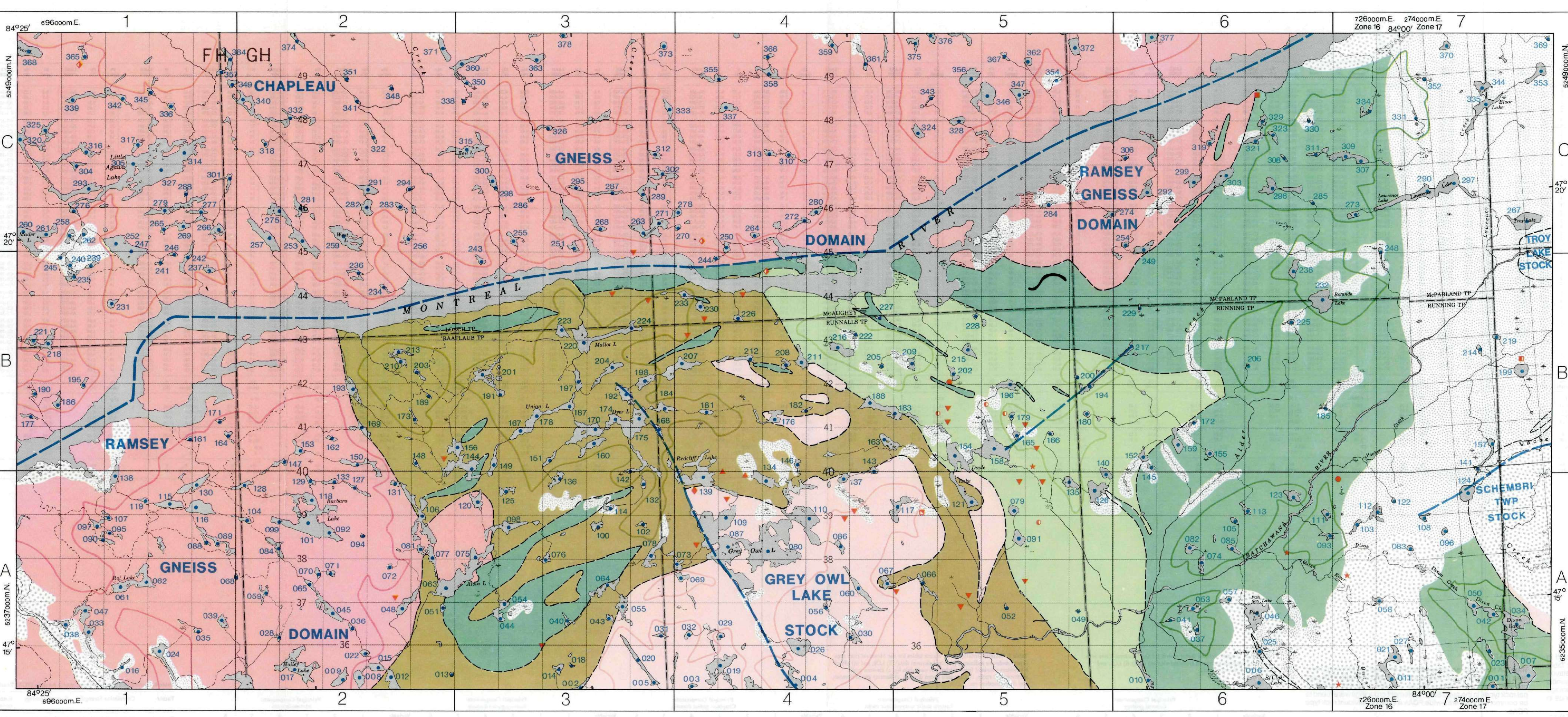


Figure 4. Regional geochemical-geological map strips across the Montreal River map area for (a) water pH, (b) water Ca, and (c) water Mg. The lake-sediment geochemistry data are shown in the lower panels.

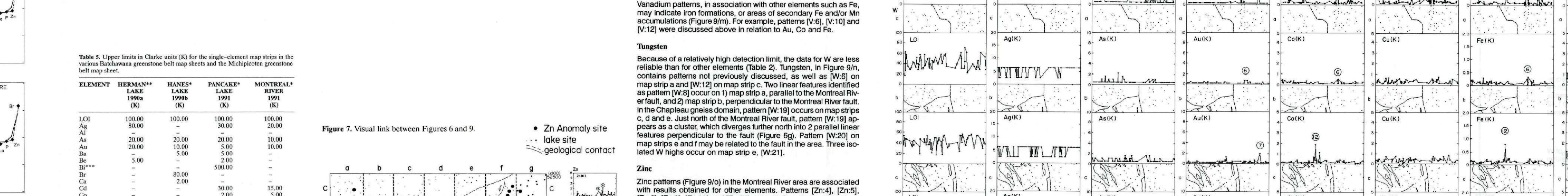


Figure 5. Visual link between Figures 4 and 5. The lake-sediment geochemistry data are shown in the lower panels.

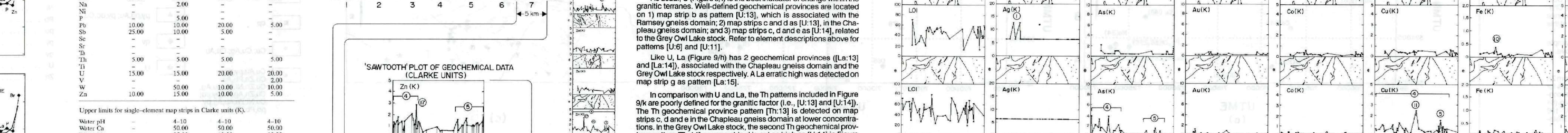


Figure 6. Regional map patterns for Ag, Au, and As. The map shows the distribution of these elements across the Montreal River map area.

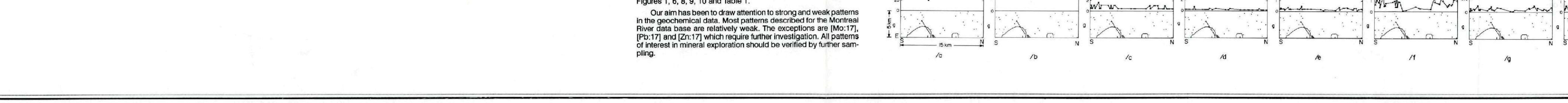


Figure 7. Regional map patterns for Ni, Bi, and Pb. The map shows the distribution of these elements across the Montreal River map area.

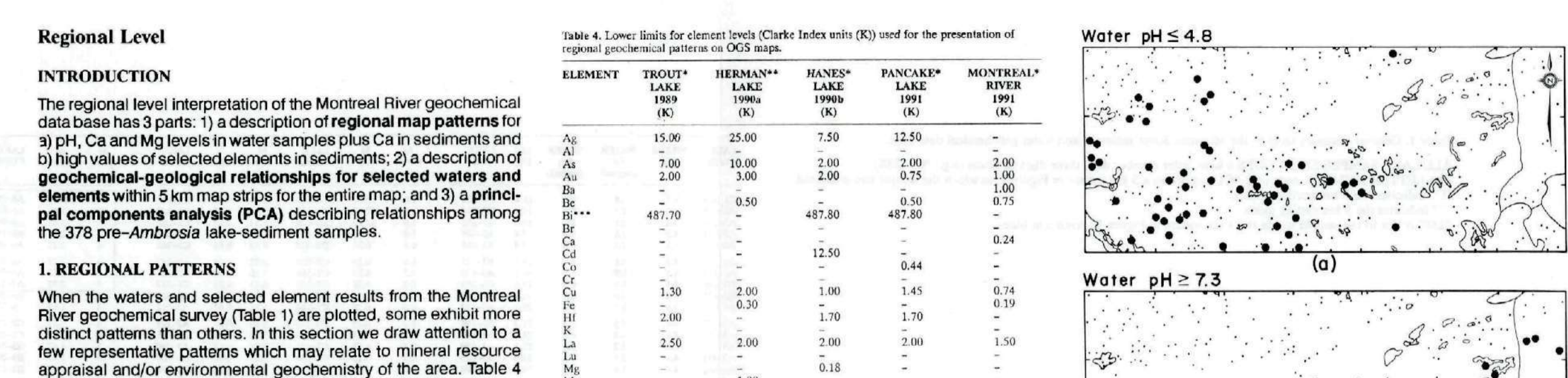


Figure 8. Regional map patterns for Cu, Zn, and Mn. The map shows the distribution of these elements across the Montreal River map area.

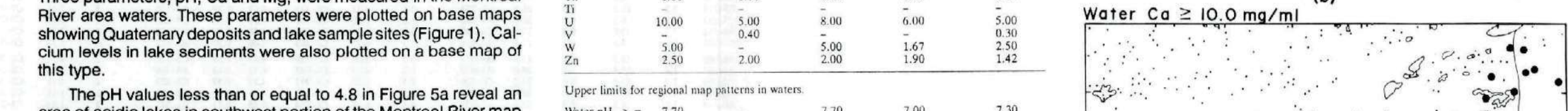


Figure 9. Regional map patterns for Co, Ni, and Bi. The map shows the distribution of these elements across the Montreal River map area.

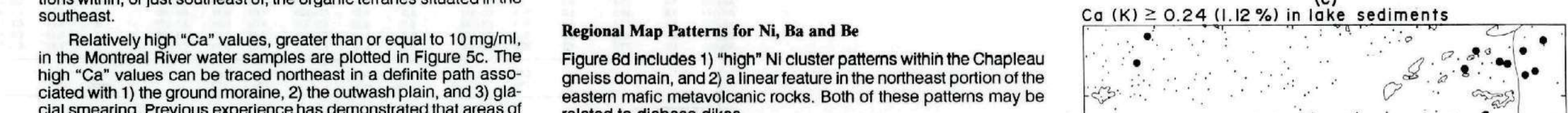


Figure 10. Regional map patterns for V, W, and Fe. The map shows the distribution of these elements across the Montreal River map area.

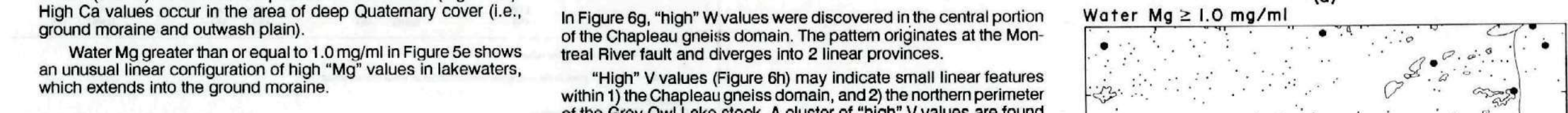


Figure 11. Regional map patterns for Au, As, and Ag. The map shows the distribution of these elements across the Montreal River map area.

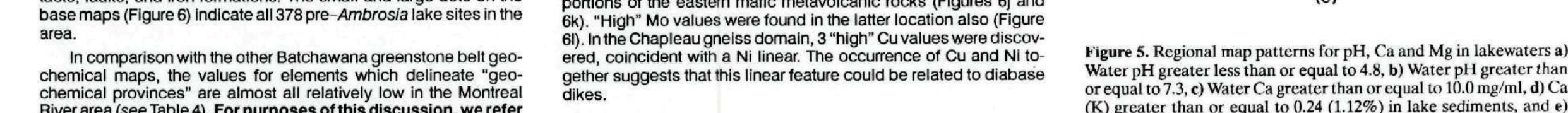


Figure 12. Regional map patterns for Ni, Bi, and Pb. The map shows the distribution of these elements across the Montreal River map area.

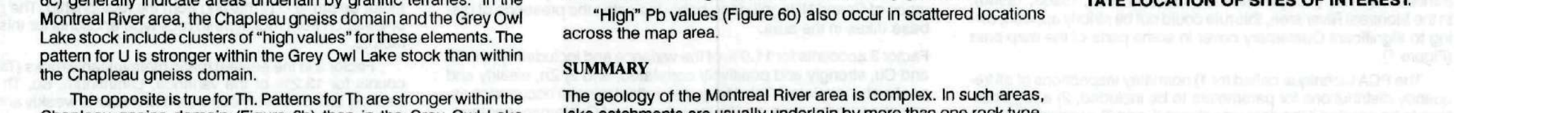


Figure 13. Regional map patterns for Cu, Zn, and Mn. The map shows the distribution of these elements across the Montreal River map area.

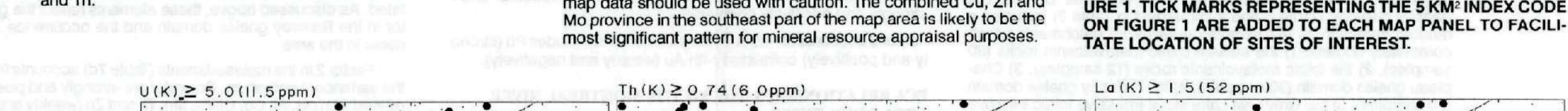


Figure 14. Regional map patterns for Co, Ni, and Bi. The map shows the distribution of these elements across the Montreal River map area.

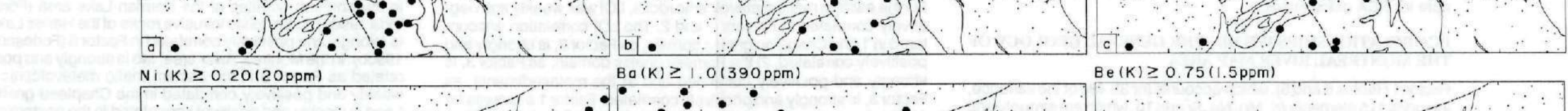


Figure 15. Regional map patterns for V, W, and Fe. The map shows the distribution of these elements across the Montreal River map area.

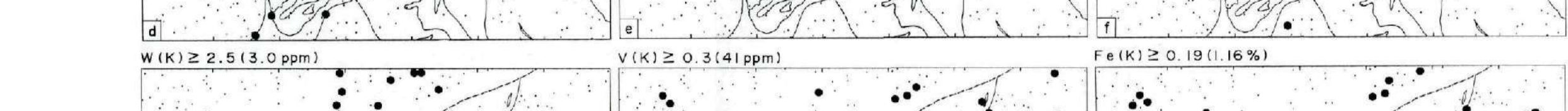


Figure 16. Regional map patterns for Au, As, and Ag. The map shows the distribution of these elements across the Montreal River map area.

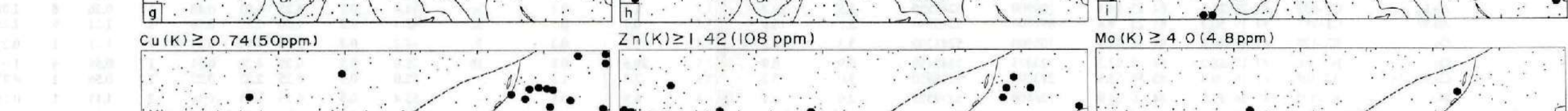


Figure 17. Regional map patterns for Ni, Bi, and Pb. The map shows the distribution of these elements across the Montreal River map area.

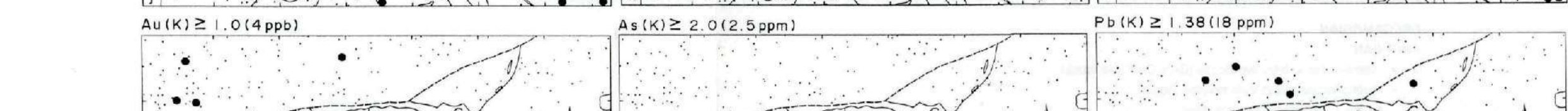


Figure 18. Regional map patterns for Cu, Zn, and Mn. The map shows the distribution of these elements across the Montreal River map area.

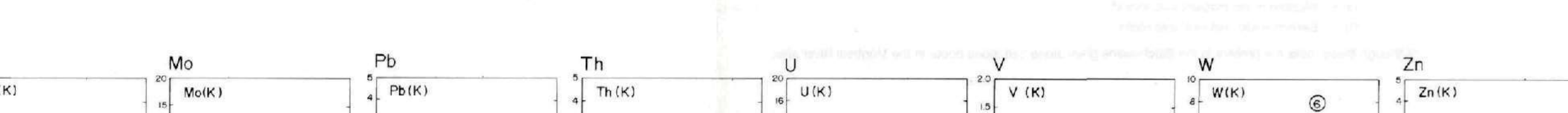


Figure 19. Regional map patterns for Co, Ni, and Bi. The map shows the distribution of these elements across the Montreal River map area.

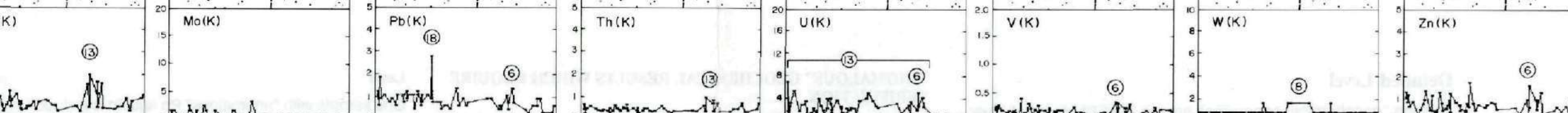


Figure 20. Regional map patterns for V, W, and Fe. The map shows the distribution of these elements across the Montreal River map area.



Figure 21. Regional map patterns for Au, As, and Ag. The map shows the distribution of these elements across the Montreal River map area.

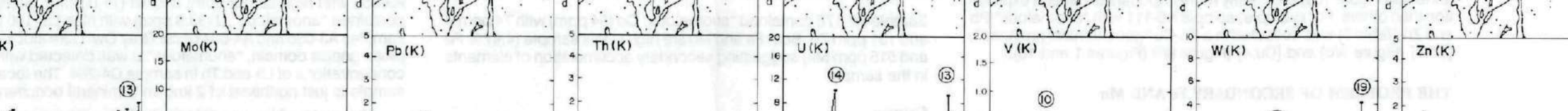


Figure 22. Regional map patterns for Ni, Bi, and Pb. The map shows the distribution of these elements across the Montreal River map area.

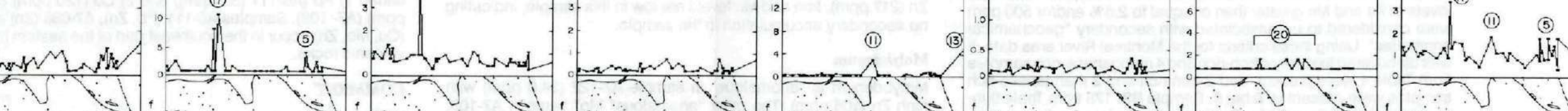


Figure 23. Regional map patterns for Cu, Zn, and Mn. The map shows the distribution of these elements across the Montreal River map area.

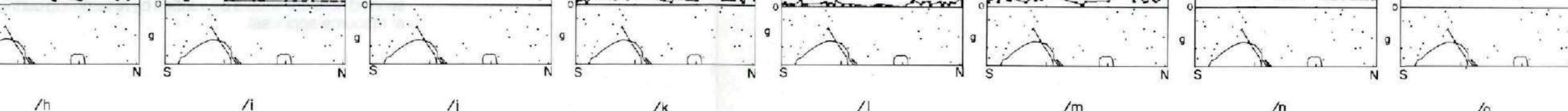


Figure 24. Regional map patterns for Co, Ni, and Bi. The map shows the distribution of these elements across the Montreal River map area.

These small maps are designed to draw attention to geochemical features of the Montreal River area. The maps are arranged in a grid, with each map showing a different element or group of elements. The maps are intended to be used in conjunction with the main regional geochemical map.

