

Geological Compilation of the Fox River Belt M.L. Rinne Manitoba Geological Survey

Project overview

The Fox River Belt forms a very large and well-preserved segment of the Circum-Superior Belt in northern Manitoba. Although several workers have contributed to understanding aspects of the Fox River Belt, major questions are unresolved, especially concerning its genetic (± metallogenic) relationships with the Thompson Nickel Belt.

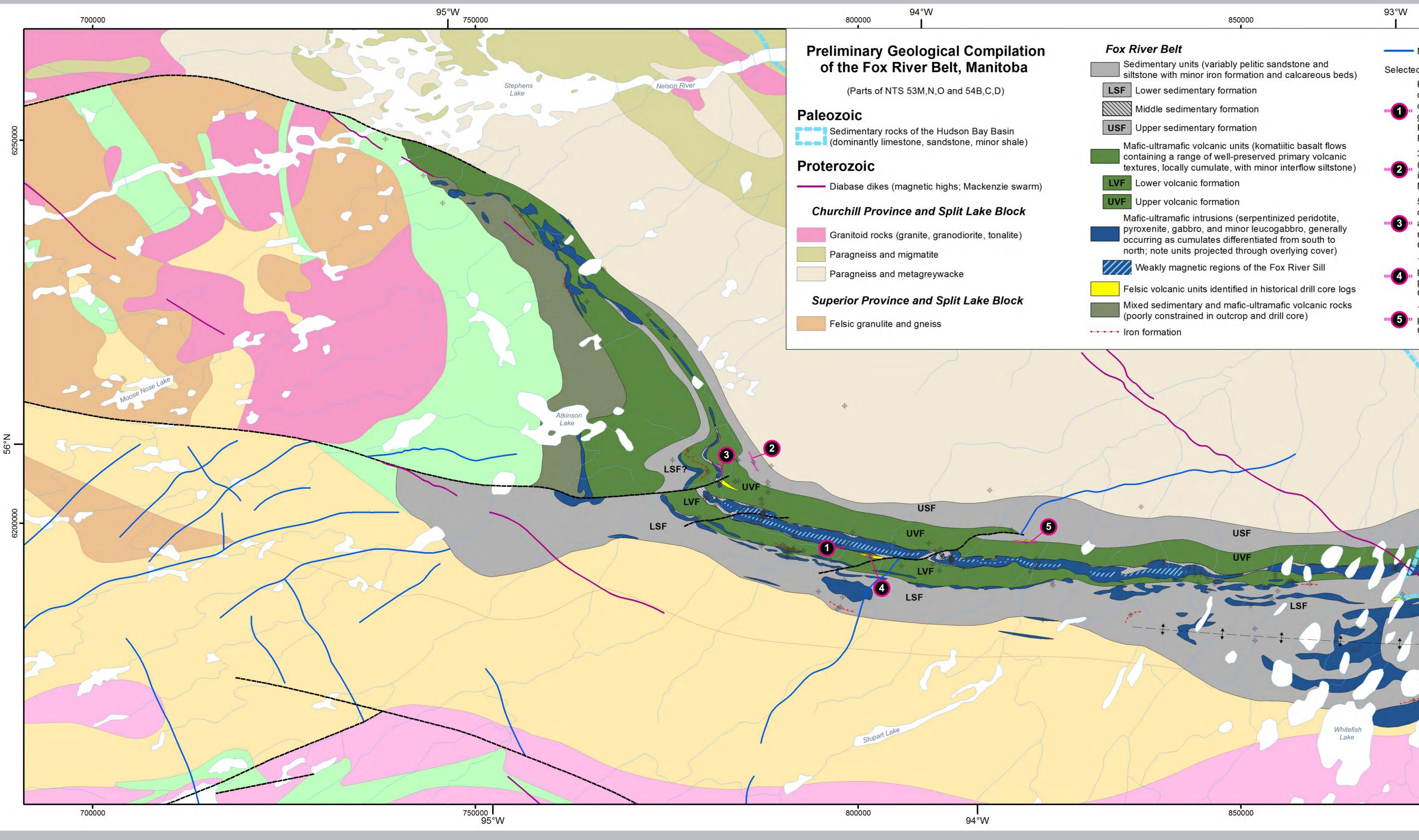
This compilation aims to provide: (1) an up-to-date geological map of the Fox River Belt; (2) a summary of the emplacement history and tectonic development of the belt, supported with new U-Pb geochronology and Sm-Nd isotope geochemistry; and (3) an assessment of broad genetic relationships between the Fox River Belt and the Thompson Nickel Belt. These outcomes are intended to inform exploration targeting Ni-Cu-PGE(±Cr) and Cu-Zn-Pb(±Au,Ag) resources in the Superior Boundary Zone, and may contribute to land use planning decisions of the Keewatin Tribal Council and associated communities.

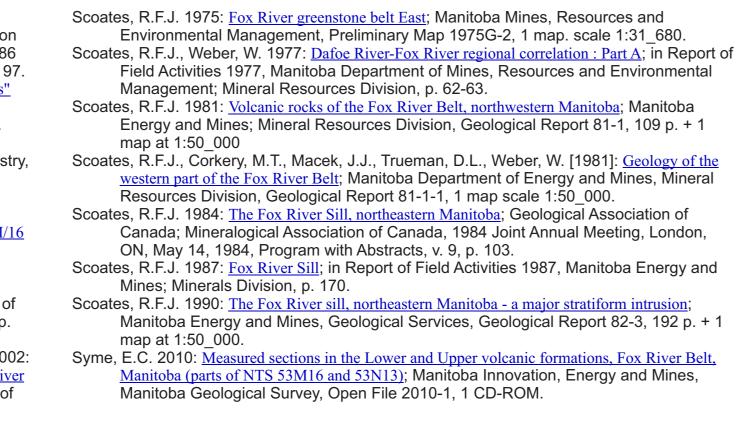
Acknowledgements and selected references

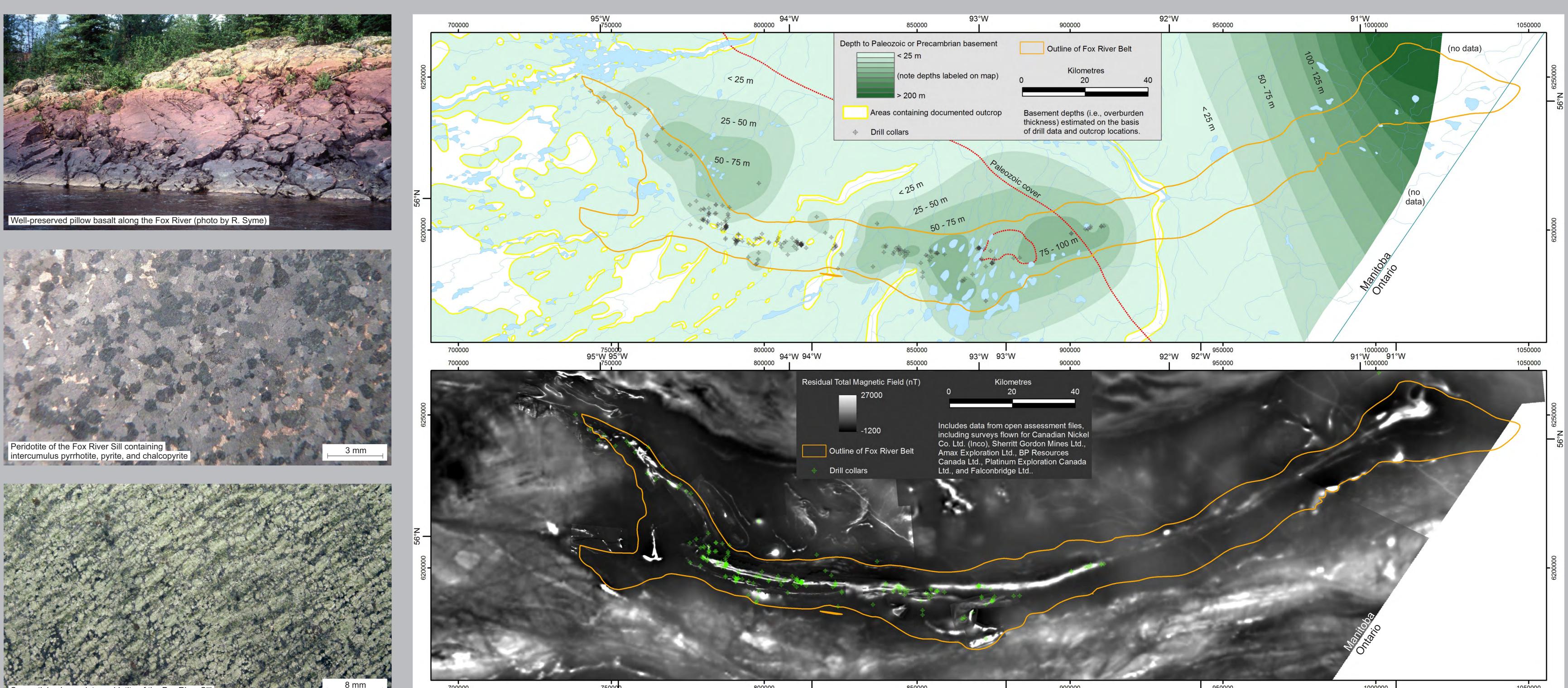
We are grateful for the advice and information offered by Jon Scoates, David Benson, James Scoates, and Guy Desharnais. This work has benefitted from the geological, cartographic, and technical expertise of various MGS staff, including C. Epp, L. Chackowsky, G. Keller, P. Lenton, B. Lenton, and M. McFarlane.

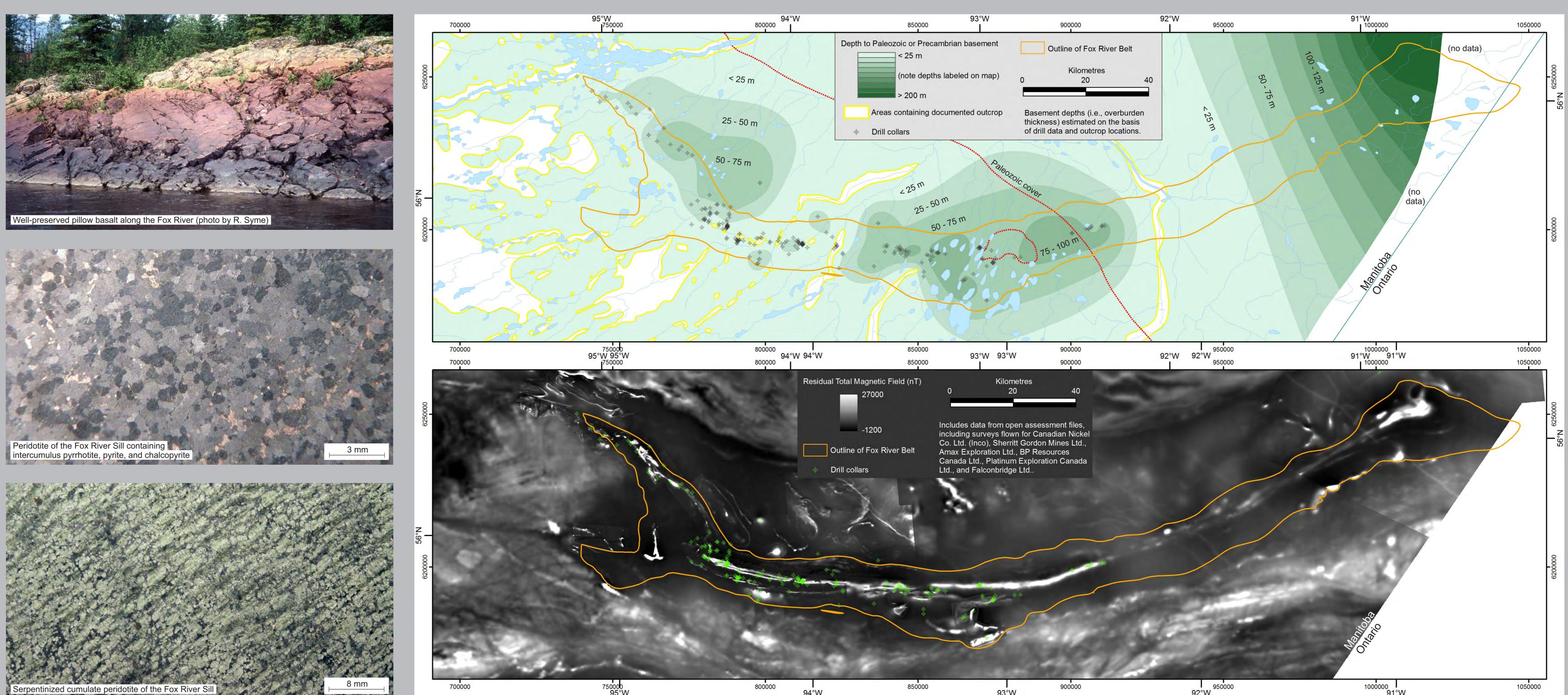
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—— Mafic dikes (magnetic lows; Molson swarm or younger?) Selected sulphide occurrences

KO Zone; a discontinuous layer of stratabound, dominantly disseminated (locally net-textured) pyrrhotite and chalcopyrite near the base of the Fox River Sill; highest grade occurrence of Ni-Cu-PGE-mineralization in the Fox River Belt known to date (~2% Cu, ~1% Ni, ~6ppm Pt+Pd; Peck et al., 1999; Desharnais, 2005)

31.1 metre interval of massive and weakly banded pyrite (50%), pyrrhotite (15%), and trace chalcopyrite + sphalerite including 3 metres at 1.6% Zn (P. Deveaux for Callinan Mines Ltd., 2007)

54.6 metre interval containing several bands of 1-10% chalcopyrite, sphalerite, pyrite, pyrrhotite, magnetite, and arsenopyrite, hosted in interbedded iron formation, tuff, and minor felsic volcanic intervals (described by V. Sidic for Callinan Mines Ltd., 2008)

1.9 metre interval of massive stratiform pyrite and pyrrhotite, within a wider interval of locally sphalerite- and pyrrhotite-mineralized felsic volcanic rock (described by L Cherneski for Canadian Nickel Co. Ltd., 1972)

14.9 metre interval of stringer to massive stratiform pyrite, Canadian Nickel Co. Ltd., 1972)

Archean

Superior Province and Split Lake Block

- Granitoid rocks (granite, granodiorite, tonalite)
- Felsic granulite and gneiss
- Amphibolite, mafic to ultramafic granulite, minor sedimentary units, and derived gneiss (note: easternmost part of Split Lake Block has not been dated)

Symbols

- ---- Faults and/or dextral shear zones
- Axial trace of open anticline (estimated from bedding

Φ	Drill collars					
	Scale 1:250,000					
0		10	Kilometres	20		

Preliminary geology and cartography by M. Rinne, after several sources of data listed in references.





