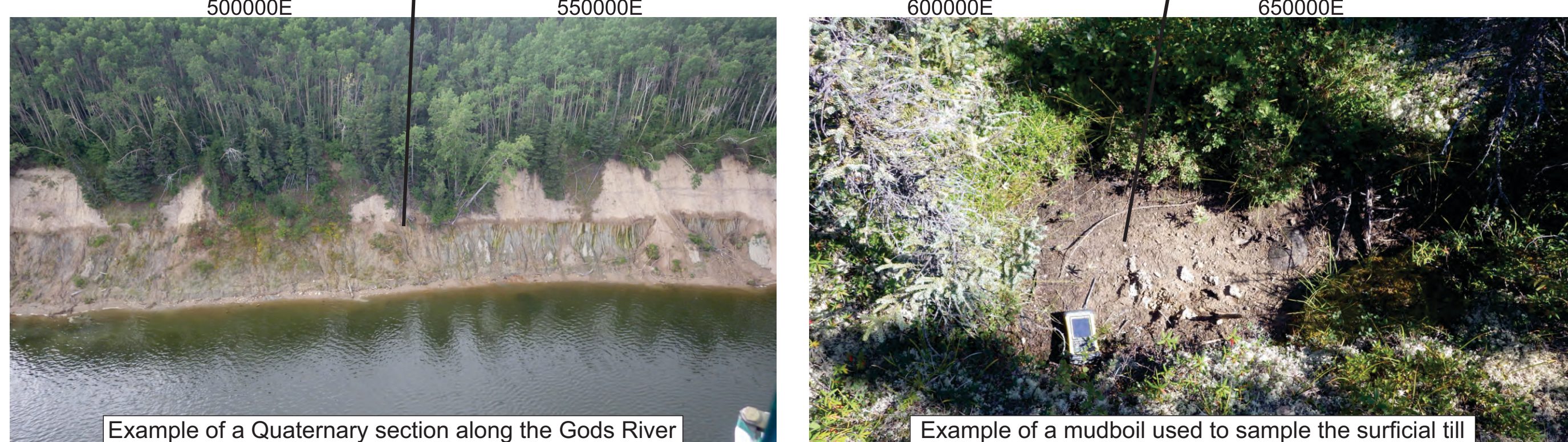
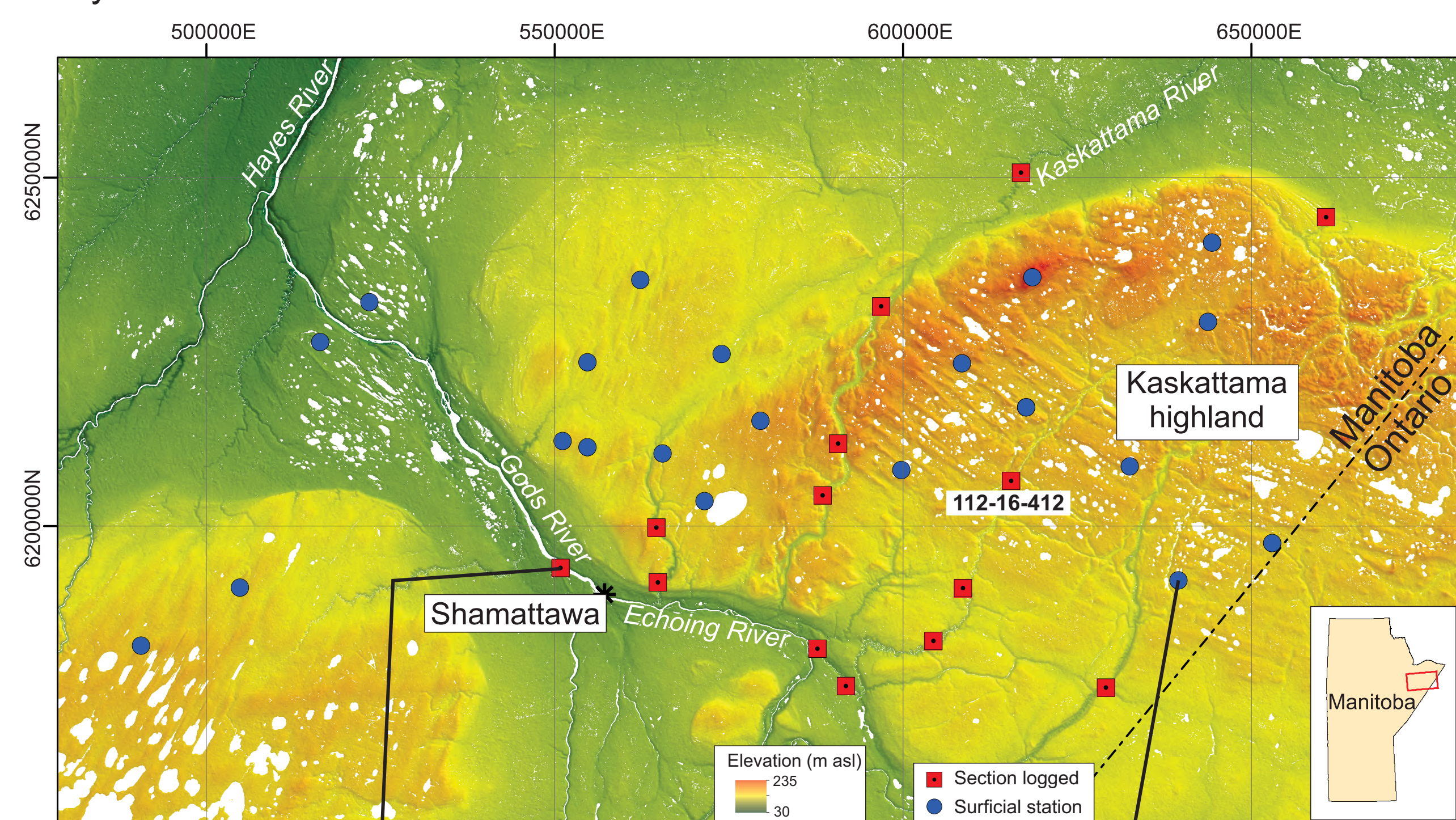


1. Introduction

The Manitoba Geological Survey (MGS) conducted eight days of Quaternary geology fieldwork in the remote Kaskattama highland region of northeastern Manitoba. The objectives of this project were to:

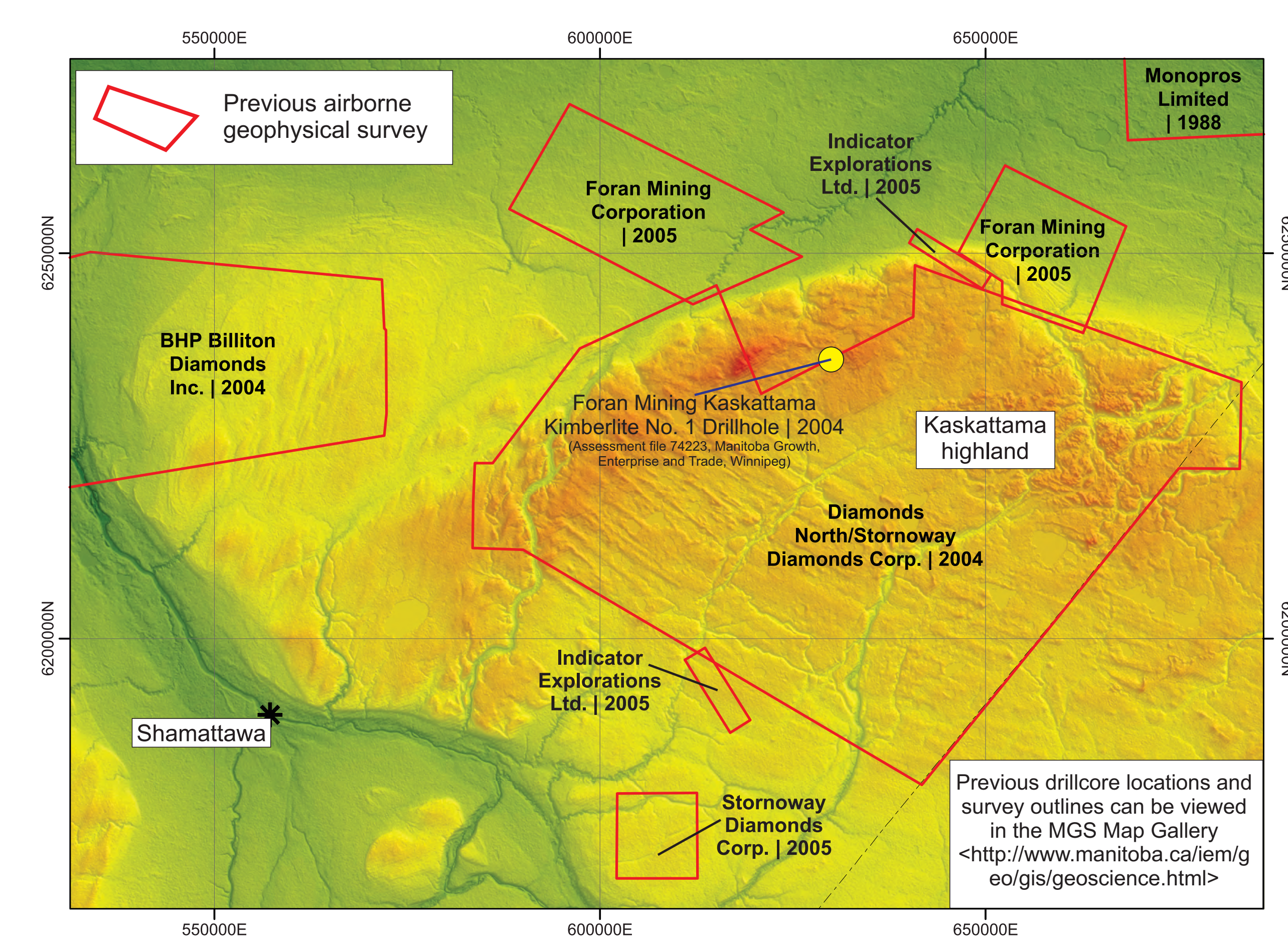
- Log exposed sections of Quaternary sediments to document the stratigraphy of the region
- Sample glacial sediments (till) for geochemistry and kimberlite-indicator-mineral (KIM) analyses



A total of 14 new Quaternary stratigraphic sections and 22 surficial stations were documented, yielding:

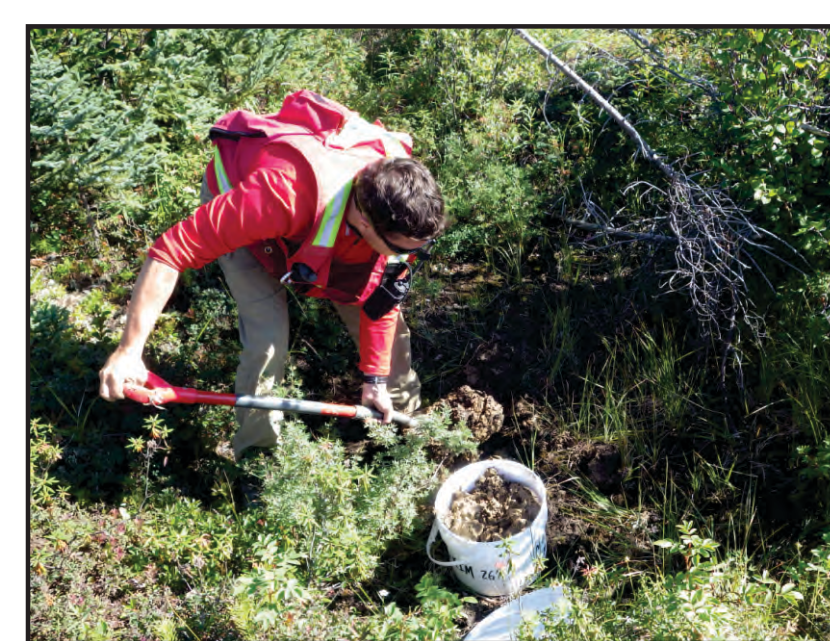
- 57 till geochemistry samples (14 from surficial samples, 43 from section samples) and
- 30 (9.5 L) till samples for KIM analysis
- 14 organic samples for radiocarbon analysis

2. Diamond Exploration



- Diamond exploration has been active in the Kaskattama region with numerous airborne geophysical surveys completed in the past 20 years
- A single drillhole (Foran Mining Kaskattama Kimberlite No. 1, Assessment File 74223, Manitoba Growth, Enterprise and Trade, Winnipeg) did not yield kimberlite, but yielded 233 m of inferred Quaternary sediments

KIM sampling conducted during the 2016 field season will be the first public release of indicator-mineral results in the Kaskattama region. This will assist in assessing the diamond-potential of the region at a reconnaissance-scale.

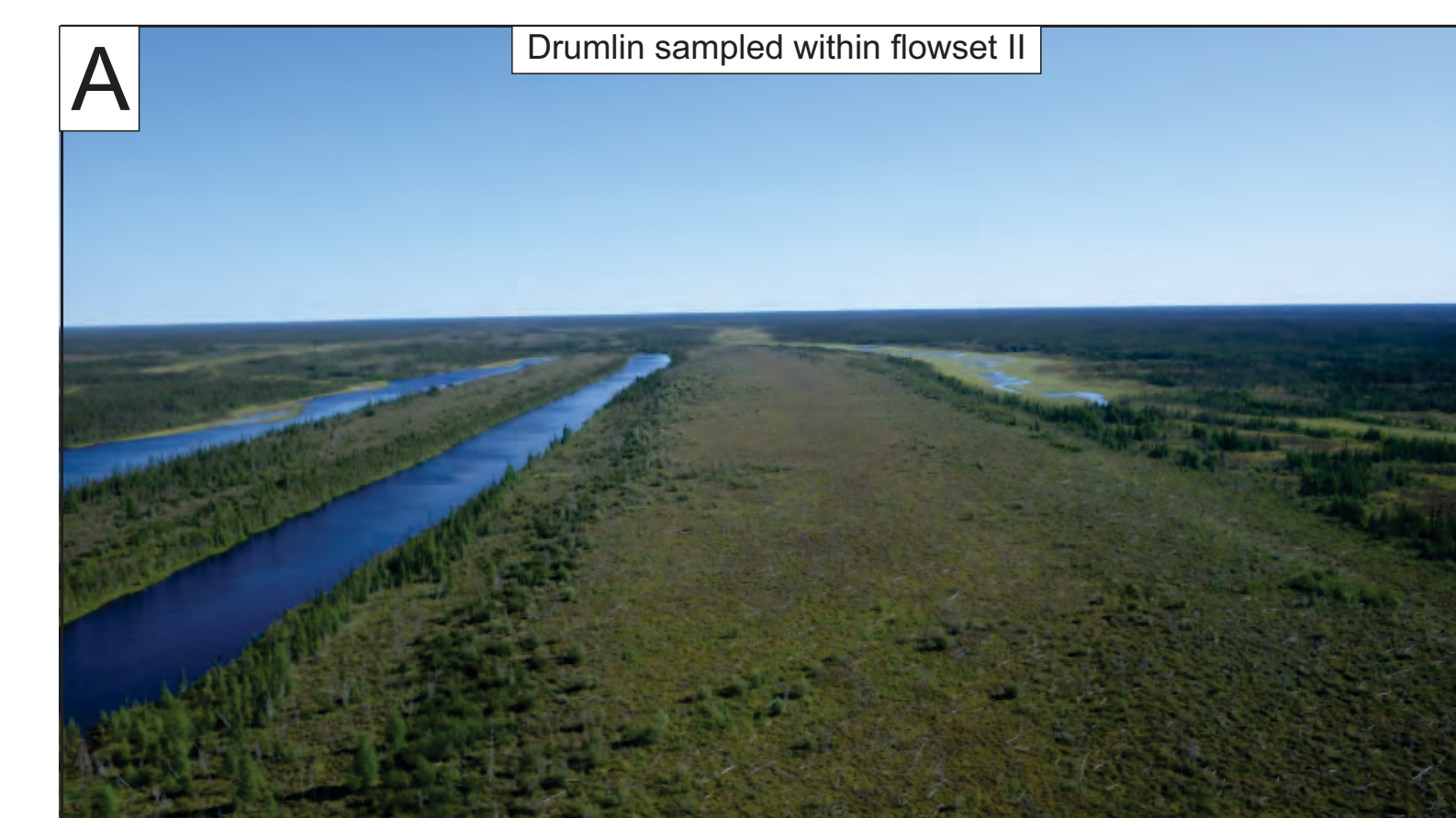
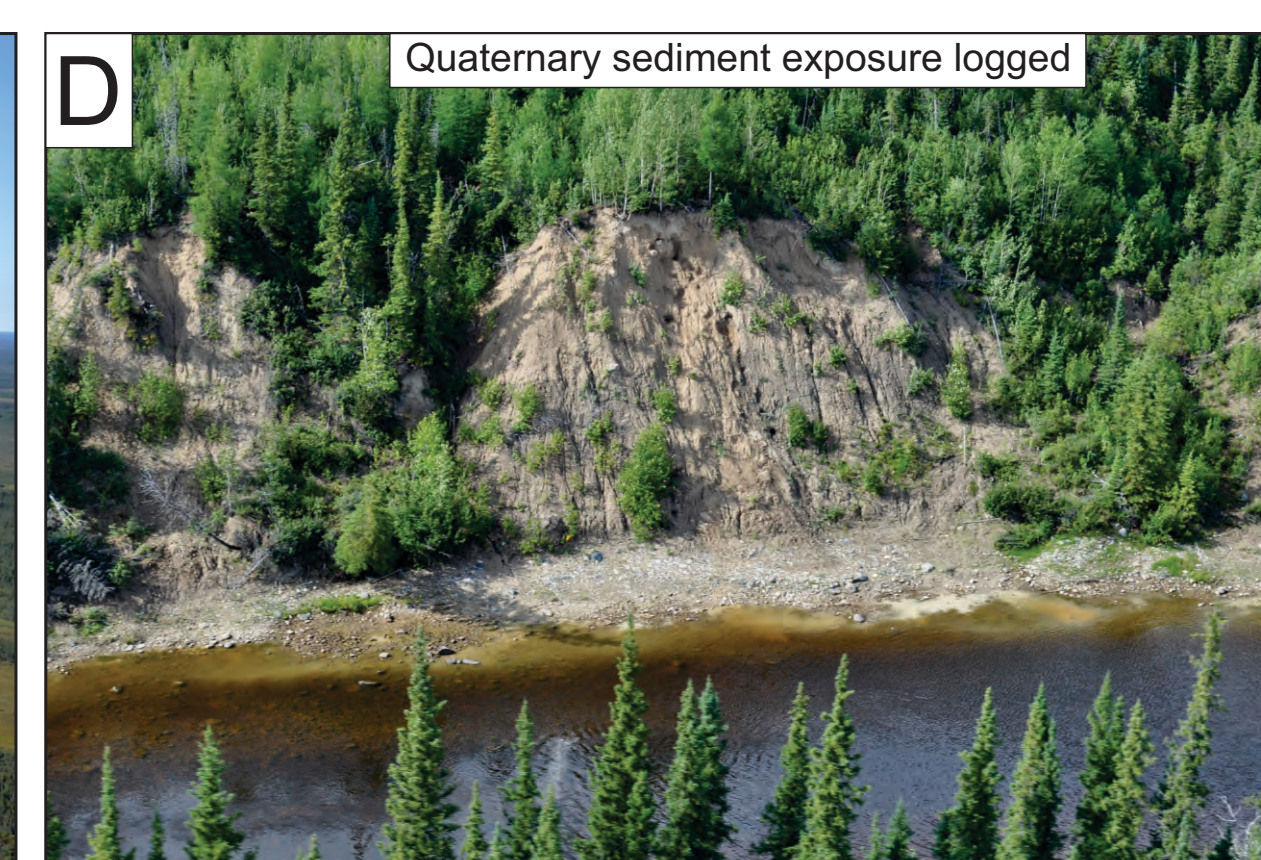
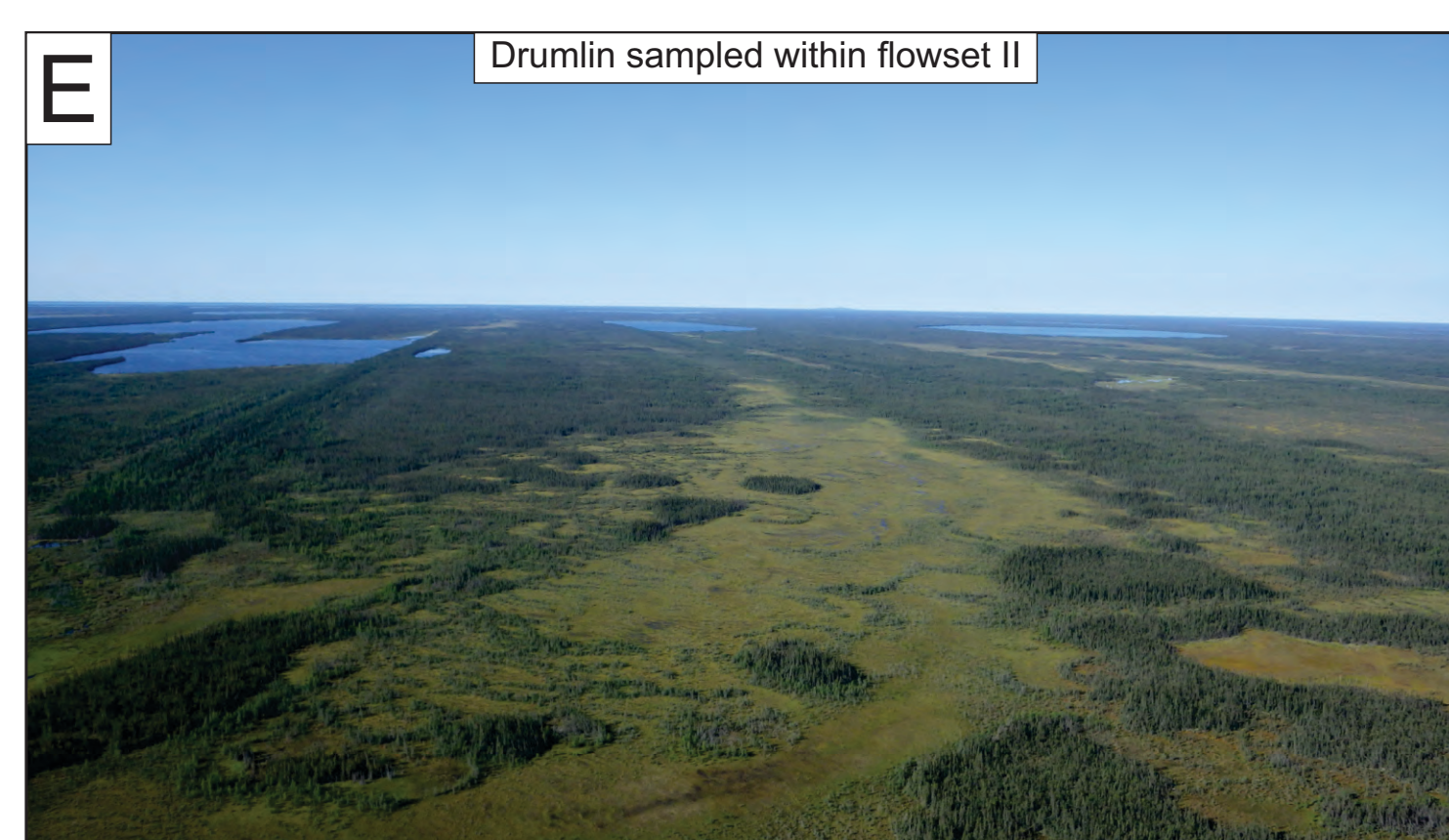
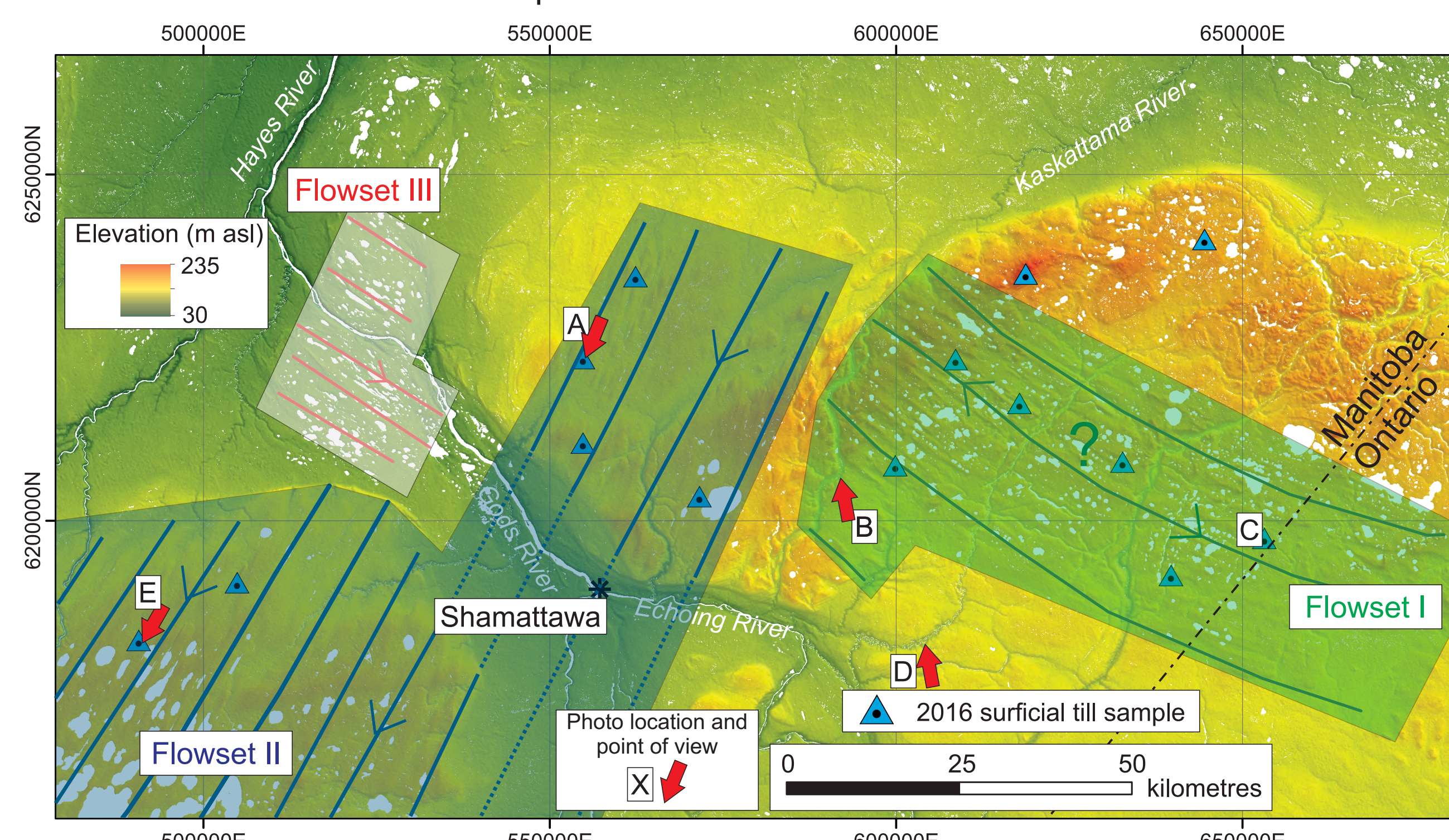


3. Regional Glacial Geomorphology

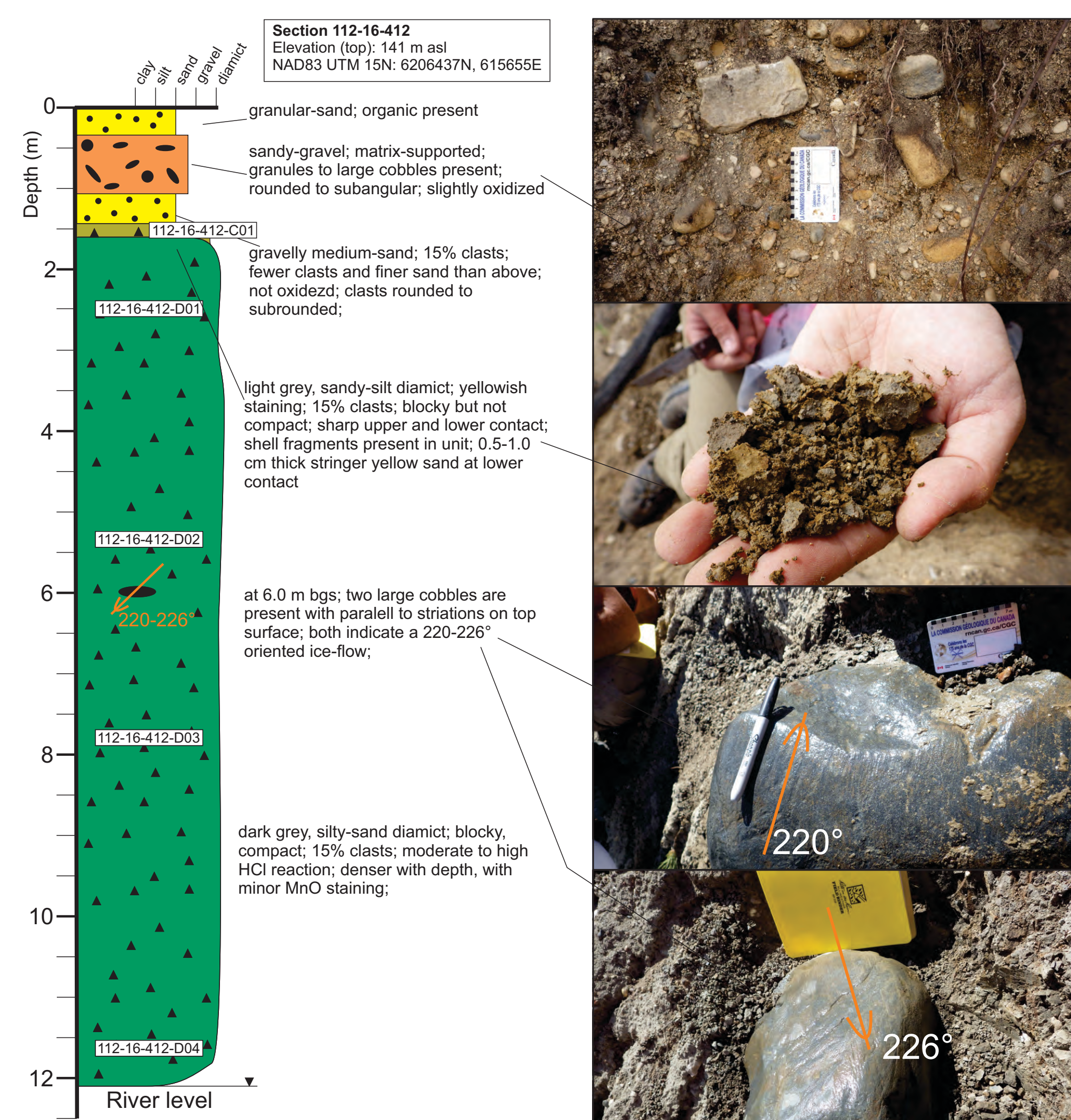
Three streamlined landform flowsets are recognized within the Kaskattama highland region:

- Flowset I is either northwest- or southeast-trending
- Flowset II is related to the southwest-trending deglacial Hayes lobe
- Flowset III is tentatively correlated to southeast-trending deglacial flow

The surficial till was sampled from Flowset I and II to document till compositional contrasts within each landscape.



4. Quaternary Stratigraphy



Section 112-16-412 is an example of a section logged on the Kaskattama highland (location depicted in introduction figure). This river-cut exposed 10.7 m of diamic overlain by 1.4 m of post-glacial sand and gravel.

Lodged boulders with parallel striations on their upper surface indicate paleo-ice-flow oriented 220-226°.



5. Moving Forward

Pending analytical results:

- Kimberlite-indicator-mineral analysis (n = 30)
- Clast lithology analysis (2-30 mm range) (n = 57)
- Till-matrix (<63 μm size-fraction) geochemistry (n = 57)
- Till-matrix (<2 mm size-fraction) texture (n = 57)
- Radiocarbon dating (n = 7 submitted)
- Paleo-environmental reconstruction of a suspected interglacial site

Questions to be answered include:

- Till provenance of flowset I - is it a result of northwest or southeast ice-flow?
- How does the till stratigraphy of the Kaskattama highlands relate to exposures along the Nelson, Hayes and Gods rivers?
- How do KIM results relate to the new till stratigraphy framework?

Till compositional results (KIM, till-matrix geochemistry, texture) will be released in a future open file and/or data repository item publication(s)



Acknowledgements

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