

In Brief:

- The Mineral Deposits Database contains data regarding mineral occurrences, including mine sites, in Manitoba
- Recent updates to the database include thousands of fixes, deletions, and additions of new mineral occurrence data across the Superior province
- The 2025 release contains new fields allowing for a province-scale breakdown of occurrences by commodity type

Citation:

Rinne, M.L. 2025: Progress report on the Manitoba Mineral Deposits Database; in Report of Activities 2025, Manitoba Business, Mining, Trade and Job Creation, Manitoba Geological Survey, p. 1–6.

Summary

Ongoing updates to the Manitoba Mineral Deposits Database have resulted in significant improvements to mineral-occurrence data across the province. Changes since 2024 include the addition of new occurrence data across parts of the Superior province, the consolidation or deletion of several redundant and irrelevant entries, and the addition of a simplified commodities-group category, allowing for a provincial-scale breakdown of occurrences, primarily by commodity type. The latest version of the Mineral Deposits Database includes approximately 17 000 occurrences, with location data, and is provided in GeoFile 5-2025 published by the Manitoba Geological Survey.

Introduction

A mineral occurrence is a concentration of a commodity or mineral of scientific or economic interest (Cox and Singer, 1986). Where mineral occurrences are of sufficient size or grade to be mined (or potentially mined), they are termed mineral deposits. The Mineral Deposits Database (MDD) is Manitoba's principal data repository for bedrock-hosted mineral occurrences. It also serves as a partial record of other geological findings relating to past-producing brine wells, glaciolacustrine clay and peat quarries, impact craters and helium in natural gas. The occurrence data in the MDD include site locations, selected geochemical analyses, descriptions of deposits (including mines and occurrences with resource estimates), and other mineral findings reported in industry and government sources. Alongside other geoscience datasets such as bedrock geology maps, comprehensive mineral-occurrence data are critical for informing mineral-potential evaluations, exploration strategies and evidence-based land-use planning or resource-management decisions.

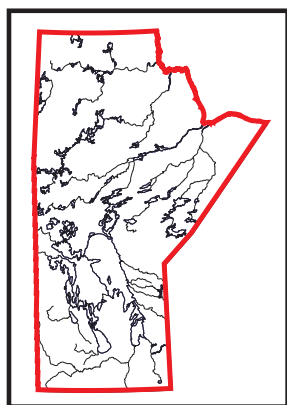
Updates to the MDD have been ongoing since 2020 and are described in past annual reports, beginning in 2020 (e.g., Rinne, 2020; 2024a). In this report, changes made to the MDD since the release of GeoFile5-2024 (Rinne, 2024b) in November 2024 are described. Much work remains to be done to clean and populate the database, particularly across the Flin Flon–Snow Lake region and the Thompson Nickel belt. However, for the first time since updates began in 2020, the mineral-occurrence data are now sufficiently organized to allow for province-wide depictions of mineral occurrences by commodity and, to some extent, by relative degree of economic importance (Rinne, 2025).

Summary of 2025 updates

Since last year's update, further georeferencing work has led to the addition of approximately 900 mineral-occurrence records, mostly across parts of the Superior province, based on data collected from geochemistry results and mineral findings reported in nonconfidential assessment reports prepared for industry. Several new occurrences were added, using data from company websites and other public sources, along with new information, such as updated resource estimates, added for existing records.

Approximately 2900 existing occurrence records were deleted or merged with other records, contributing to a total of 6050 records marked for deletion since updates began in 2020. Nearly all of the deletions apply to results that were later found to be redundant or duplicated in a combination of Mineral Inventory Card records (a database of earlier analogue records), past MDD records (Conley et al., 2009) and assessment report data. Most of the occurrences marked for deletion in the past year relate to multiple occurrences of the same commodity in the same drillhole and many of those duplicated results were due to drillhole identifications that were inconsistently recorded across multiple sources. While there may be some value in retaining several geochemistry results from the same drillhole, the intended process in the MDD updates, as outlined in Rinne (2021), is to record for each drillhole only the highest recorded value for each commodity.

Also in 2024, continued review of past MDD records compiled by Conley et al. (2009) resulted in a further 240 occurrences being marked for deletion—and many others downgraded to the 'discretion-



any occurrence' category—after determining that they do not meet the occurrence criteria listed in Rinne (2021). Most of these deleted occurrences from the 2009 version of the MDD relate to findings of minor disseminated pyrite or pyrrhotite in rocks for which there are insufficient geochemical data or that lack other indications of mineralization.

Location errors were corrected for hundreds of existing occurrences derived from many sources, including some significant errors relating to quarries and historical mines, such as the Moose Horn mine, which was incorrectly recorded as occurring at the community of Moosehorn in mine location data collected by the Mines Branch decades ago. Several thousand minor corrections (some identified through user feedback) were applied to existing records in other fields, particularly in the 'Comments/occurrence description' and 'Drillhole ID' fields.

The 'Sample medium' field has been expanded to include: subsurface bedrock, surface outcrop, boulder, sediment (panned), lake sediment, till, glaciolacustrine clay (in the case of four clay quarries recorded in the Mineral Inventory Cards), beach clast, peat (in the case of three peat quarries recorded in the Mineral Inventory Cards) and natural gas well (relating only to helium occurrences in natural gas). The MDD is not designed or intended to provide an inventory of petroleum or natural gas resources, nor does it currently reflect all records pertaining to quarries in Manitoba. Sample-medium information has also been added to many of the earlier occurrence records and work continues to populate this field for future updates.

The 'Mineral deposit model' field has been further populated and now includes 25 categories. A deposit model—intended to follow, to the extent possible, the classification scheme of Hofstra et al. (2021)—has now been assigned to all of the active and most of the historical mine sites in Manitoba, along with most of the larger or more important occurrences with resource estimates. The mineral-deposit models were assigned on the basis of geological setting, hostrocks and ore-mineral associations. As in 2024, the deposit-model field will remain blank in the majority of cases that lack the context or detailed information needed to inform a genetic deposit model.

A simplified 'Commodities group' field has been added and populated to allow for a rough breakdown of known mineral occurrences by commodity or, in some cases, by rock type at the provincial scale (Figures GS2025-1-1 to -3). Although past versions of the MDD (including Conley et al., 2009) contain fields relating to commodity types and deposit types, the information entered in these fields did not allow for this level of commodity-specific breakdown. Furthermore, versions prior to 2009 did not consistently distinguish deposits (i.e., occurrences with resource estimates, historical mines and active mines, as shown in Figure GS2025-1-1) from smaller or less-documented occurrences (i.e., occurrences and discretionary occurrences, shown alongside selected quarry records in Figures GS2025-1-2, -3).

In these preliminary commodity-group classifications, an occurrence is classified as primarily gold ('Au [$\pm$ Ag, Cu, Zn, Pb, W, Bi, Te]'), where Au (ppm) exceeds $2 \times (\text{Cu} + \text{Zn}[\%])$. Among the occurrences that do not meet this requirement, but that contain >0.5 ppm Au, most are classified as primarily base-metal occurrences ('Cu, Zn, or Pb [$\pm$ Fe, Au, Ag]'). Alternatively, users can opt to ignore the preliminary 'Commodities group' field, or test different classifications using the geochemical data columns in GeoFile5-2025 (Rinne, 2025).

Depending on the intended application or the commodity of interest, users may prefer to further subdivide mineral occurrences in the MDD based on other information, such as by selected geochemical data columns. For example, the 'Li, Ta, Cs, Rb, Sn, Be, or related pegmatites' group is a wide-ranging category; most of the pegmatite occurrences assigned to this group have sufficient information to indicate that they are not simple pegmatites, but not enough to further classify into NYF- or LCT-type pegmatites (either enriched in niobium, yttrium and fluorine or in lithium, cesium and tantalum, respectively). However, some occurrences contain enough mineralogical or geochemical data to allow for further classification.

Economic considerations

The ongoing expansion of, and improvements to, the MDD provide a far more comprehensive picture of the spatial distribution of various mineral commodities across Manitoba. The mineral-occurrence data shared in GeoFile5-2025 (Rinne, 2025) are directly applicable to mineral-potential assessments and related land-use decisions; they can be used to inform mineral exploration strategies targeting specific areas or commodities, to identify regions of under-recognized mineral potential, or to support long-term mineral development and related infrastructure planning in partnership with First Nations communities.

Acknowledgments

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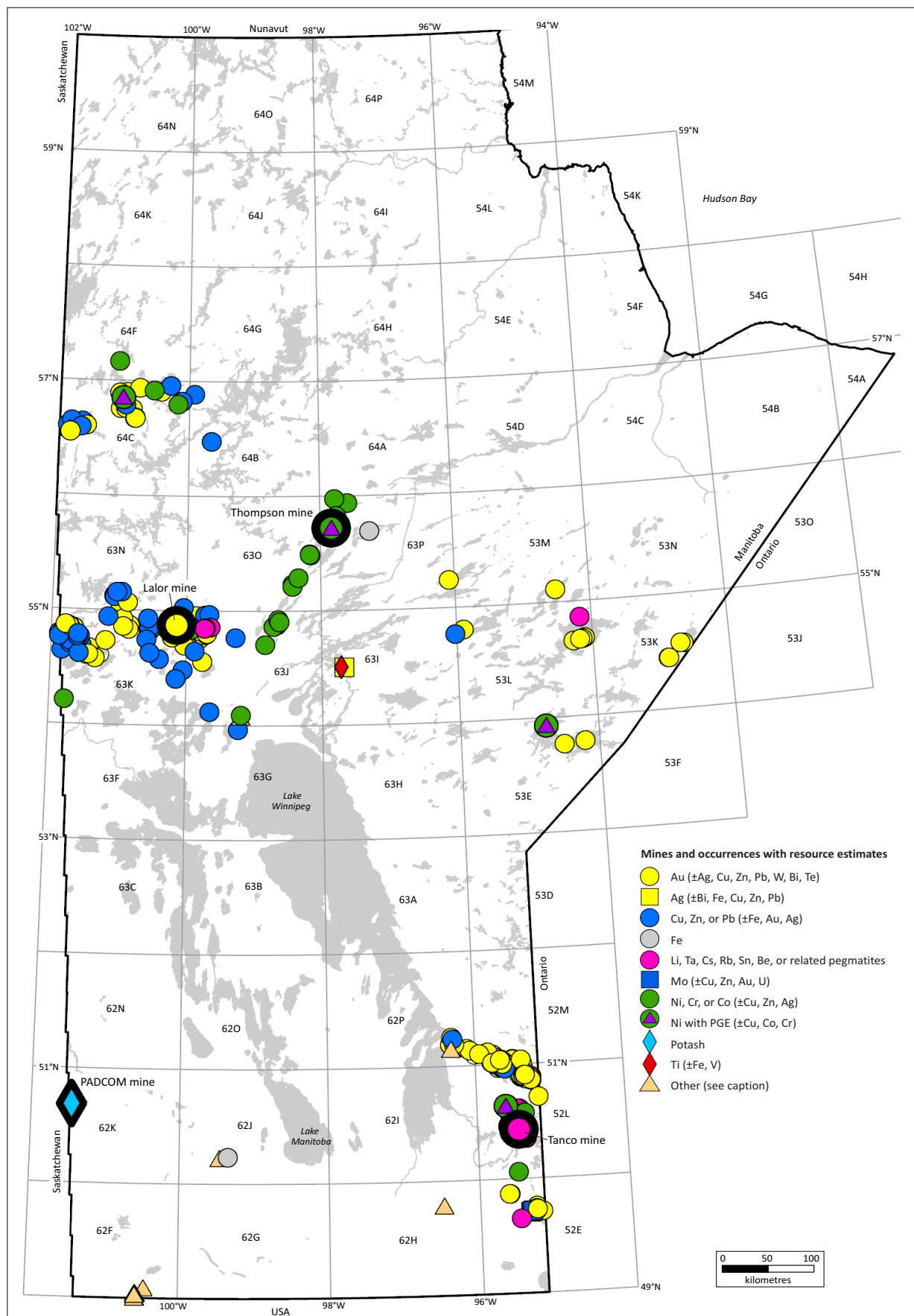


Figure GS2025-1-1

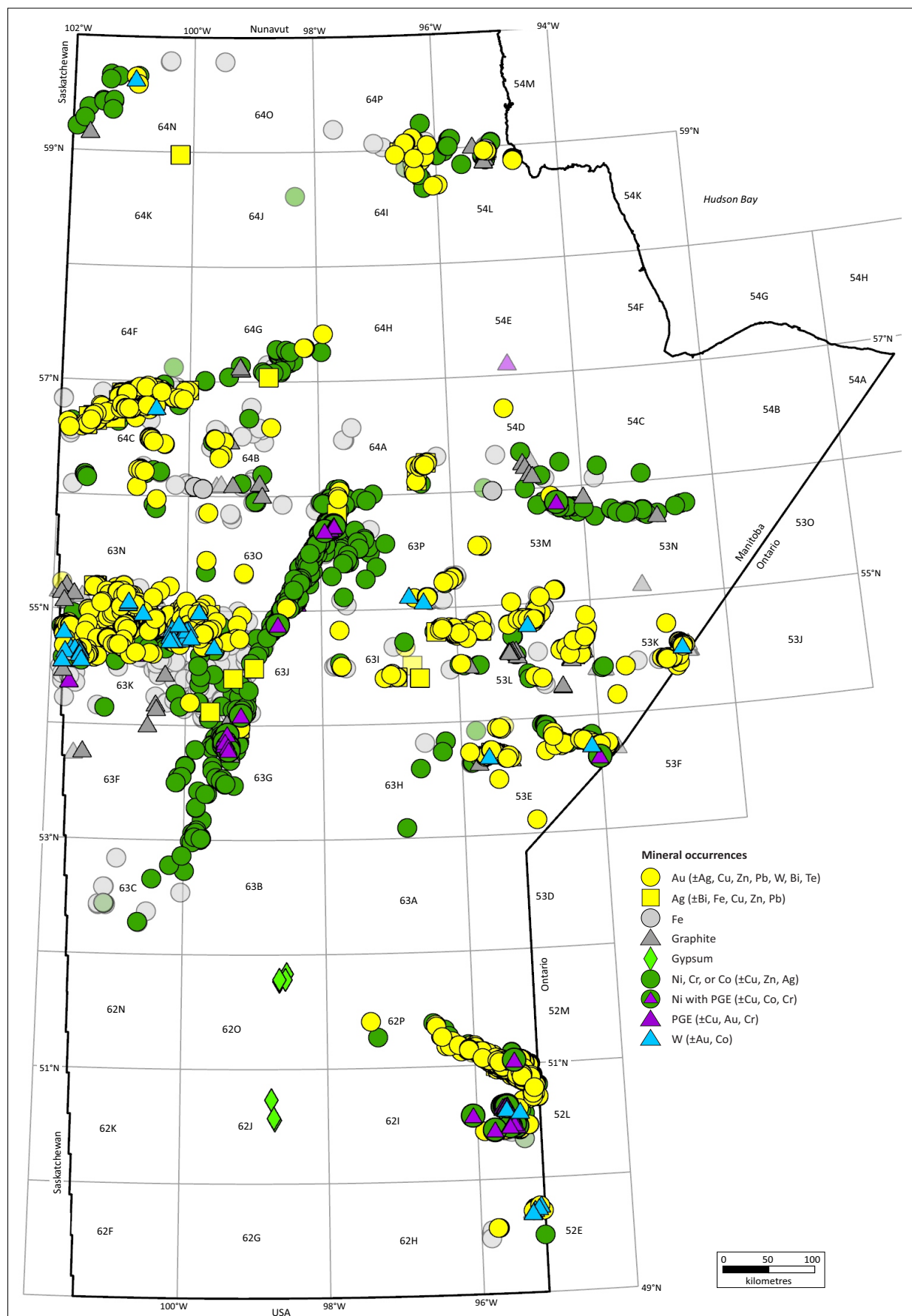


Figure GS2025-1-2

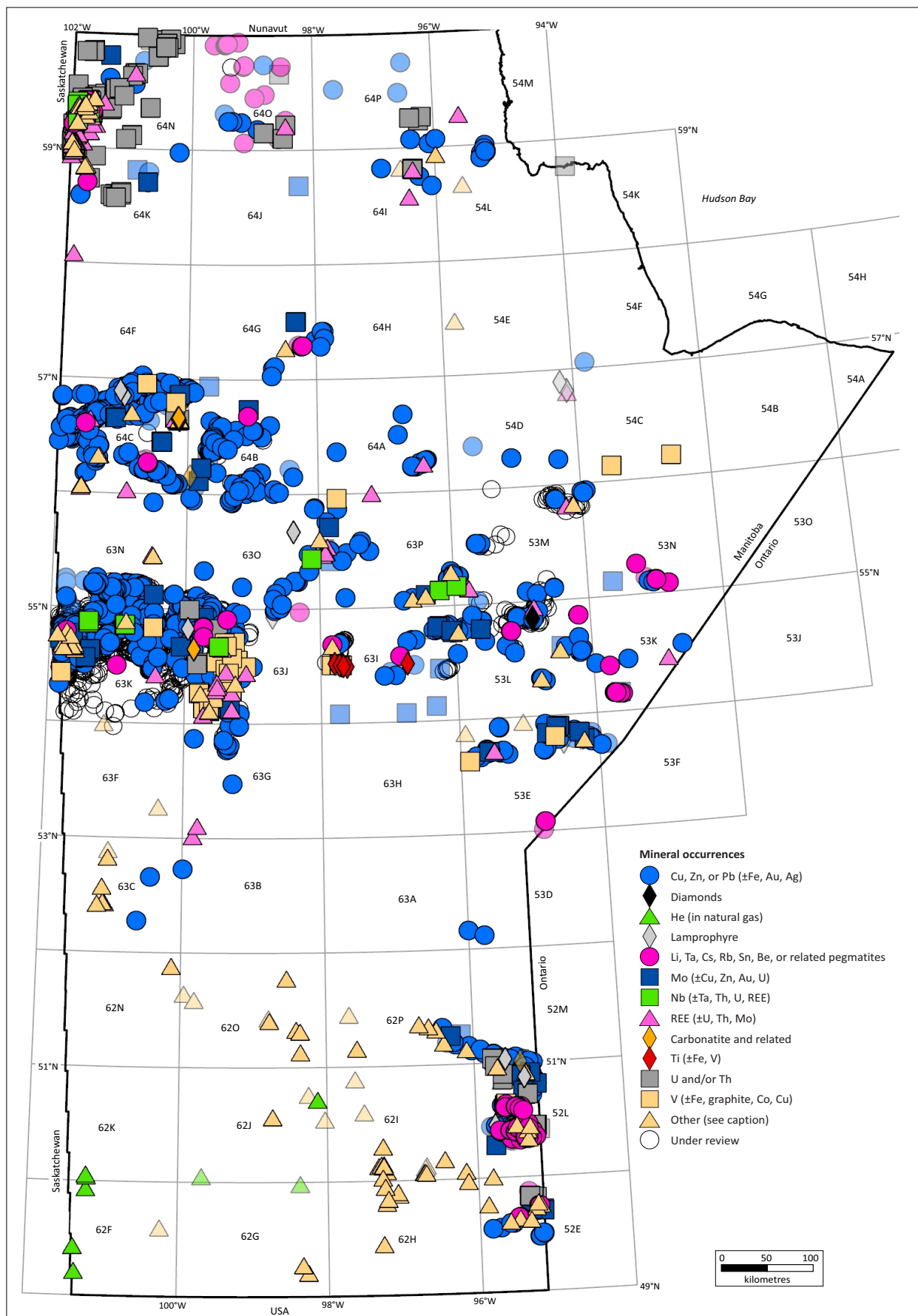


Figure GS2025-1-3

Figures

Figure GS2025-1-1: Map of Manitoba, showing only active mines (labeled symbols with thick black outlines), historical mines and mineral occurrences with resource estimates in the 2025 version of the Mineral Deposits Database (Rinne, 2025). Occurrences classified as 'Other' are: historical coal mines in NTS area 62F; a past-producing NaCl brine well in 62J; and selected locations relating to high-purity silica sand deposits of the Winnipeg Formation in 62P and 62H.

Figure GS2025-1-2: Map of Manitoba, showing mineral occurrences (excluding mines and larger occurrences) including Au, Ni, platinum-group element (PGE) and other commodities listed in the map legend. Occurrences classified as discretionary occurrences (mostly tentative or unconfirmed findings) are indicated with semitransparent symbols and relate mostly to drillcore intersections of elevated iron or graphite concentrations, with uncertain (or not yet determined) total thickness of the mineralized interval. Water bodies are omitted for clarity. The gypsum occurrences are quarries based mostly on previously compiled Mineral Inventory Cards (an earlier analogue archive); note that the Mineral Deposits Database (Rinne, 2025) does not yet contain all quarry-related records in Manitoba.

Figure GS2025-1-3: Map of Manitoba, showing mineral occurrences (excluding mines and larger occurrences) including Cu, Zn, Li, rare-earth elements (REE), Ti, V and other commodities listed in the map legend. Occurrences classified as discretionary occurrences in the Mineral Deposits Database (Rinne, 2025) are indicated with semitransparent symbols. Water bodies are omitted for clarity. Some of the REE occurrences are from carbonatite samples with insufficient sample information; partial overlap between carbonatite occurrences and the REE commodities group may be resolved as more sample information is gathered in future updates. Occurrences classified as 'Other' are: a series of commodities including P, Ga, Ge and Hf that are broadly associated with REE-, Mo- and U-enriched samples across parts of NTS areas 64K and 64N; findings of elevated Ga, Ge and Zr concentrations associated with REE-enriched samples from the Eden Lake carbonatite complex in 64C; quarries including limestone, clays and peat across much of NTS 62; and many other findings of elevated Mn, Bi, Sb, Tl and other less common commodities. The 'Other' category also includes some findings that are more significant from an academic rather than economic perspective, such as impact craters (two confirmed and one tentative), gemstone-quality minerals and amber clasts. For more details regarding each occurrence, see GeoFile5-2025 (Rinne, 2025).

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