

INTRODUCTION

New geochemical data from re-analysis of archived stream sediment samples have been assessed using weighted sums modeling and catchment basin analysis as described in the methodology report that accompanies this map (Mackie et al., 2015). Both commodity and pathfinder element abundances are evaluated to highlight areas that show geochemical responses consistent with a variety of base and precious-metal mineral deposit types.

SAMPLING AND ANALYSIS PROGRAMS

Stream sediment and water samples from the Wolf Lake area (NTS 105B) were collected at a reconnaissance scale in 1978 under the direction of the Geological Survey of Canada as part of the Federal Uranium Reconnaissance program (Geological Survey of Canada, 1986). The samples were analysed in several stages and the geochemical data were originally released in Geological Survey of Canada (GSC) Open File 563 and 1299 (Geological Survey of Canada, 1979 and 1986).

MINERAL OCCURRENCES

The most significant mineral occurrences discovered within the Wolf Lake area have been classed as polymetallic Ag-Pb-Zn vein (e.g., Dale, Logjam and Logan deposits), porphyry W (e.g., Logtong deposit and Cordilleran prospect), Pb-Zn skarn (e.g., Atom and Bar prospects), Sn skarn (e.g., Partridge prospect) or Sn vein and greisen (e.g., Cusp prospect).

WEIGHTED SUMS MODELING

As described in the methodology report (Mackie et al., 2015), two approaches have been used to subdue the influence of background lithological variation and secondary absorption on the composition of stream sediments. One uses data levelled by the dominant geology mapped within each catchment, while the other uses residuals calculated from regression against principal components.

other deposit types may be represented in a given model due to similarities in elemental abundances and associations.

Exploratory data analysis of both raw element data and principal components show that the distribution of many commodity and pathfinder elements is strongly controlled by lithologic variation. The first principal component, accounting for ~25% of the total variation, shows high positive loadings for Co, Ni, Mg, Cu, Fe, Ca and Sn, and negative loadings for Sn, U, Ti and Rb.

The effectiveness of historical sampling coverage has been assessed empirically using graphs of WSMs plotted against catchment surface area to determine the ideal maximum catchment size (10 km²). Catchments that cover larger areas (shown on the map with bold outlines) are interpreted to have been under-sampled and thus require further sampling to properly evaluate the area for geochemical anomalies.

Table 1: List of Mineral Occurrences for NTS map sheet 105B (Yukon MINFILE, 2015)

Table with columns: Number, Name, Type, Status, Commodities. Lists various mineral occurrences like WILDCAT, LUCK, FREDRICK, etc., and their associated elements like Gold, Silver, Zinc, Lead, Copper, etc.

Table 2: Importance rankings for weighted sums models using data levelled by dominant mapped geology.

Table with columns: Target Deposit Type*, Other Deposit Types*, Mn, Fe, Co, Ni, Cu, Mo, Zn, Pb, Ag, Au, As, Ba, Cd, Sn, Sb, Te, Hg, Tl, Bi, W. Shows importance rankings for different deposit types across various elements.

*Polymetallic Ag-Pb-Zn type includes vein and main to styles; SEDEX = sedimentary exhalative; VMS = volcanic-hosted/associated massive sulphide deposits.

†Au data are not levelled by dominant geology, instead log_e transformed raw data are used.

‡Hg residual from regression analysis against Loss-on-ignition (LOI)

LEGEND section showing symbols for Town, Mineral Occurrence, Road, Contour, River, NTS map sheet, Water Body, Wetland, Sample Location, Catchment, and Catchments >10 km². Also includes a section for Weighted sums model (Geology Levelled) with a color-coded legend for Polymetallic Ag-Pb-Zn deposits (0-50th percentile to 98-100th percentile).

REFERENCES

Geological Survey of Canada. 1979. Regional stream sediment and water geochemical reconnaissance data, Yukon Territory (105B). Geological Survey of Canada Open File 563, revised 1980.
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Mackie, R., Arne, D. and Brown, O., 2015. Enhanced interpretation of regional stream sediment (RGS) geochemical data from Yukon: catchment basin analysis and weighted sums modeling. Yukon Geological Survey, Open File Report 2015-10.
Yukon MINFILE, 2015. Yukon MINFILE - A database of mineral occurrences. Yukon Geological Survey, www.data.geology.gov.yk.ca, accessed May 2015.

RECOMMENDED CITATION

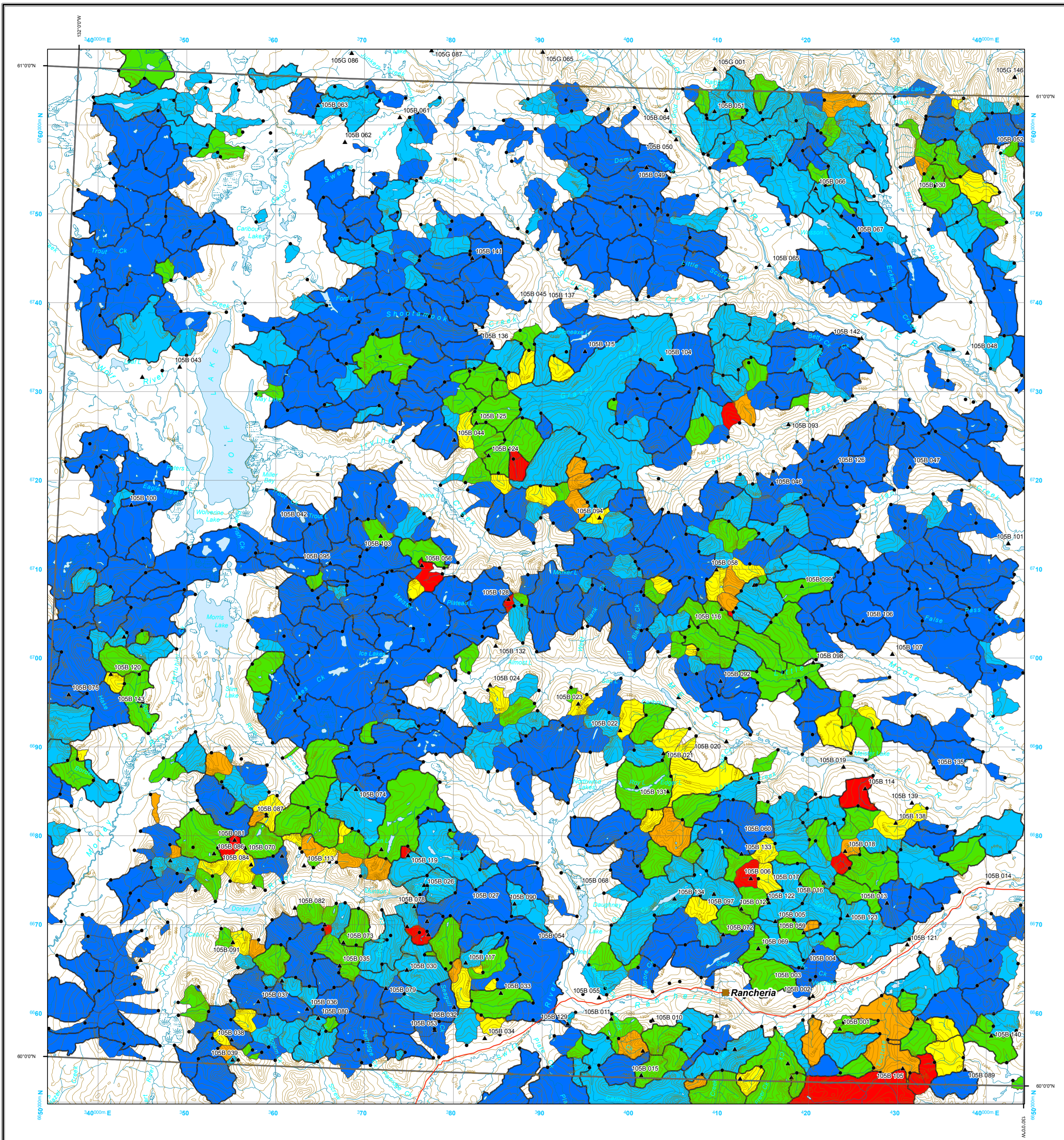
MACKIE, R., ARNE, D. AND PENNIMPEDE, C., 2016. Weighted sums model for Polymetallic Ag-Pb-Zn deposits levelled by geology. In: Enhanced interpretation of stream sediment geochemical data for NTS 105B. Yukon Geological Survey, Open File 2015-8, scale 1:250 000, sheet 4 of 15.
Catchment basin polygons generated by the Yukon Geological Survey (J. O. Bruce).
Any revisions or additional geological information known to the user would be welcomed by the Yukon Geological Survey.
Paper copies of this map and the accompanying report may be obtained from the Yukon Geological Survey, Energy, Mines and Resources, Government of Yukon, Room 102-300 Main St., Whitehorse, Yukon, Y1A 2B5. Ph. 867-667-3201, Email geology@gov.yk.ca.
A digital PDF (Portable Document File) file of this map may be downloaded free of charge from the Yukon Geological Survey website: http://www.geology.gov.yk.ca.

Yukon Geological Survey Energy, Mines and Resources Government of Yukon

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Weighted sums model for Polymetallic Ag-Pb-Zn deposits levelled by mapped geology (NTS 105B) Sheet 4 of 15

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Map navigation and scale information including: 1:250 000-scale topographic base data produced by CENTRE FOR TOPOGRAPHIC INFORMATION, NATURAL RESOURCES CANADA; ONE THOUSAND METRE GRID; CONTOUR INTERVAL 100 FEET; SCALE 1:250 000; and a diagram for obtaining numerical values for approximate mean declination 2015.

Map navigation and scale information including: Poly metallic Ag-Pb-Zn Weighted sums model (Geology Levelled) Sheet 4 of 15; SCALE 1:250 000; and a diagram for obtaining numerical values for approximate mean declination 2015.

Grid reference table showing coordinates for various map sheets: 105F, 105G, 105H, 105C, 105B, 105A, 104N, 104O, 104P, 104M, 104D, 104E.