



105F	105G	105H
QUET LAKE	FINLAYSON LAKE	FRANCES LAKE
105C	105B	105A
TEISIN	THIS MAP	WATSON LAKE
104N	104O	104P
ATLIN	JENNINGS RIVER	MCDAME

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. The results of modeling, completed using two approaches, are presented as a series of catchment maps and associated data files. This release is a part of a regional assessment of stream sediment geochemistry that covers a large part of Yukon.

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). A recent re-analysis program conducted by the Yukon Geological Survey (YGS) has generated new geochemical data from analysis of archived sample material as described in YGS Open File 2015-6 (Jackaman, 2015). The reader is referred to these reports for detailed descriptions of sampling techniques, analytical procedures, and quality control measures.

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). Other deposit types represented in the map area include epithermal Au-Ag (e.g., Shoolamook prospect), volcanogenic massive sulphide (e.g., Convert Prospect), and porphyry Cu-Mo (e.g., McPres prospect). Polymetallic Ag-Pb-Zn vein and manto-type prospects trend into the map sheet area to the south (NTS 104O) within British Columbia supporting the prospectivity of the region for this class of mineralization.

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. Weighted sums models (WSM) have been generated using the processed data. The importance rankings used in WSMs are summarized in Table 2 for a variety of deposit types. Each model is optimized for a target deposit type however

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 S, and negative loadings for Sn, U, Ti and Rb. Respectively, these element groupings form spatial patterns matching distribution of mafic volcanic rocks in the southwest and Kachika group sedimentary and mafic igneous rocks in the northeast part of the map area and granite plutons throughout the map area. The second principal component, accounting for ~15% of the total variation, shows high loadings for Cd, As, Sb, Ag, Zn, Cu and Mo and forms a spatial trend matching the distribution of sedimentary rocks of the Earn, Finlayson, Klinkit groups and Snowcap assemblage that form a northwest trending package in the southwest part of the map area. Several base-metal skarn occurrences occur in this area suggesting that the second principal component may represent, in part, a mineralization signature for this deposit type. Regression analysis of these metals against the relevant principal component effectively filters these postulated terrane-effects resulting in enhanced responses elsewhere in the map area and preserving responses related to known occurrences in most instances. Levelling by dominant mapped geology has a more subdued effect on filtering the interpreted lithologic control. In order to reduce the impact this has on the WSM using this approach, certain elements were given low importance rankings or, in the case of Cd, were omitted for certain deposit types. Negative rankings were used in both approaches to help distinguish signatures of different deposit types that have similar metal associations.

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. Given the likelihood that a mineralization signal would be progressively diluted with increasing catchment size, marginally high WSM scores in large catchments could also be of interest.

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

Number	Name	Type	Status	Commodities
105B 001	WILDCAT	Vein Polymetallic Ag-Pb-Zn-Au	Ordnance Prospect	Gold, Lead, Silver, Zinc
105B 002	STERNBERG	Vein Polymetallic Ag-Pb-Zn-Au	Showing	Arsenic, Gold, Silver, Zinc, Lead, Copper
105B 003	LUCK	Manto Polymetallic Ag-Pb-Zn	Ordnance Prospect	Antimony, Tungsten, Zinc, Silver, Copper, Lead, Gold
105B 004	FRIDLER	Skarn W	Ordnance Prospect	Copper, Silver, Zinc, Tungsten, Lead
105B 005	ARNE	Vein Polymetallic Ag-Pb-Zn-Au	Showing	Zinc, Silver
105B 006	LEINA	Vein Polymetallic Ag-Pb-Zn-Au	Showing	Lead, Silver
105B 007	DALE	Vein Polymetallic Ag-Pb-Zn-Au	Lead Producer	Lead, Gold, Zinc, Silver, Copper
105B 008	IKULLIYAY	Vein Polymetallic Ag-Pb-Zn-Au	Ordnance Prospect	Lead, Gold, Copper, Silver, Zinc
105B 009	TRESE	Unknown	Unknown	Copper
105B 010	TROY	Porphyry Cu-Mo-Au	Anomaly	Copper
105B 011	CARLUK	Unknown	Showing	Antimony, Zinc, Arsenic, Silver, Gold
105B 012	SHAWBY	Vein Polymetallic Ag-Pb-Zn-Au	Ordnance Prospect	Silver
105B 013	KUBARK	Skarn Pb-Zn	Ordnance Prospect	Lead, Zinc
105B 014	FINLAYSON	Unknown	Unknown	Lead, Zinc
105B 015	BLACKROCK	Unknown	Unknown	Copper, Silver, Lead, Zinc
105B 016	KODJUD	Vein Polymetallic Ag-Pb-Zn-Au	Ordnance Prospect	Copper, Zinc, Gold, Lead, Silver
105B 017	HARDYCK	Vein Polymetallic Ag-Pb-Zn-Au	Ordnance Prospect	Lead, Silver, Zinc
105B 018	KERNE	Vein Polymetallic Ag-Pb-Zn-Au	Showing	Copper, Lead, Silver, Tungsten, Zinc
105B 019	BROCKHAGEN	Skarn W	Ordnance Prospect	Copper
105B 020	NIGHT	Unknown	Ordnance Prospect	Gold, Lead, Silver, Zinc, Copper, Tungsten, Uranium
105B 021	TRISER HART	Vein Polymetallic Ag-Pb-Zn-Au	Unknown	Silver, Zinc, Lead
105B 022	AURORA	Skarn Pb-Zn	Prospect	Gold, Zinc, Tungsten, Silver, Molybdenum, Manganese, Lead
105B 023	SHAW	Unknown	Unknown	Copper, Silver, Tungsten
105B 024	ALMST	Unknown	Unknown	Copper, Gold, Lead, Silver, Zinc, Tungsten
105B 025	HEDDEN	Skarn Pb-Zn	Anomaly	Copper, Zinc, Silver, Lead, Gold
105B 026	ATOM	Skarn Pb-Zn	Ordnance Prospect	Antimony, Zinc, Lead, Silver
105B 027	BAR	Skarn Pb-Zn	Ordnance Prospect	Copper, Zinc, Silver, Lead, Gold
105B 028	BAR	Skarn Pb-Zn	Ordnance Prospect	Gold, Lead, Silver, Tin, Zinc
105B 029	BAR	Skarn Pb-Zn	Ordnance Prospect	Lead, Silver, Zinc
105B 030	WILSON	Skarn Sn	Ordnance Prospect	Lead, Silver, Tin, Zinc
105B 031	PARTRIDGE	Skarn Sn	Prospect	Gold, Zinc, Tin
105B 032	WAGO	Skarn Pb-Zn	Showing	Lead, Zinc, Silver, Tungsten, Tin
105B 033	GEEM	Gemstone Schist-hosted emerald	Anomaly	Unknown
105B 034	BRIDGE	Unknown	Unknown	Lead, Zinc, Silver, Tungsten, Tin
105B 035	PLATE	Volcanogenic Sulphide - type not determined	Unknown	Barium, Lead, Tin, Silver, Copper, Gold
105B 036	GODDART	Skarn Pb-Zn	Ordnance Prospect	Silver, Tin, Zinc
105B 037	SCHEIDT	Skarn Pb-Zn	Ordnance Prospect	Copper, Silver, Lead, Zinc, Tungsten
105B 038	SHANK	Unknown	Unknown	Deposit
105B 039	LOGJAM	Vein Polymetallic Ag-Pb-Zn-Au	Ordnance Prospect	Silver, Gold, Zinc, Lead
105B 040	LOGJAM	Vein Polymetallic Ag-Pb-Zn-Au	Ordnance Prospect	Molybdenum, Tungsten, Tungsten Trioxide, Beryllium
105B 041	JACK	Skarn Sn	Ordnance Prospect	Copper, Tin, Zinc, Silver
105B 042	POULIN	Vein Polymetallic Ag-Pb-Zn-Au	Unknown	Lead, Zinc, Silver
105B 043	THOUT	Vein Barite-Fluorite	Showing	Unknown
105B 044	MANK	Unknown	Anomaly	Copper, Molybdenum
105B 045	IRVINE	Skarn Pb-Zn	Showing	Lead, Silver, Zinc
105B 046	FAVORABLE	Skarn Pb-Zn-Ag-Cu - High Sulphuration	Ordnance Prospect	Arsenic, Silver, Gold, Molybdenum, Tungsten
105B 047	TRUNG	Skarn W	Unknown	Copper, Silver, Copper
105B 048	CANIN	Skarn W	Unknown	Tungsten
105B 049	RODOLPH	Vein Polymetallic Ag-Pb-Zn-Au	Showing	Copper, Lead, Silver, Tungsten
105B 050	DYME	Unknown	Unknown	Copper
105B 051	COLD GOLD	Vein Polymetallic Ag-Pb-Zn-Au	Showing	Copper, Gold, Silver
105B 052	IRANBOW	Vein Polymetallic Ag-Pb-Zn-Au	Anomaly	Copper
105B 053	PARTRIDGE	Skarn Sn	Ordnance Prospect	Antimony, Zinc, Lead
105B 054	COULETTE	Sediment-hosted Sedimentary Epithermal Zn-Pb-Ag (Skarn)	Ordnance Prospect	Lead, Zinc, Silver
105B 055	ROCK	Unknown	Unknown	Unknown
105B 056	ZAK	Vein Polymetallic Ag-Pb-Zn-Au	Ordnance Prospect	Copper, Zinc, Lead, Nickel
105B 057	ROCK	Vein Polymetallic Ag-Pb-Zn-Au	Showing	Arsenic, Gold, Lead, Silver, Zinc
105B 058	BENGY	Vein Polymetallic Ag-Pb-Zn-Au	Showing	Lead, Silver, Zinc
105B 059	IFAG	Vein Polymetallic Ag-Pb-Zn-Au	Prospect	Lead, Zinc, Silver
105B 060	DALATI	Vein Polymetallic Ag-Pb-Zn-Au	Unknown	Silver
105B 061	JANKER	Unknown	Unknown	Unknown
105B 062	STANLEY	Unknown	Unknown	Unknown
105B 063	LARD	Unknown	Unknown	Unknown
105B 064	BOWEN	Unknown	Unknown	Unknown
105B 065	BOWEN	Unknown	Unknown	Unknown
105B 066	BOWEN	Unknown	Unknown	Unknown
105B 067	BOWEN	Unknown	Unknown	Unknown
105B 068	DALGHEEY	Unknown	Unknown	Unknown
105B 069	LOCK	Unknown	Unknown	Unknown
105B 070	CAN	Skarn Sn	Ordnance Prospect	Copper, Garnet, Gemstones, Silver, Tin
105B 071	TELEVISION	Unknown	Ordnance Prospect	Unknown
105B 072	ROCK	Unknown	Unknown	Unknown
105B 073	CURRENT	Skarn Sn	Prospect	Copper, Tin, Tungsten, Zinc
105B 074	PROCK	Skarn W	Showing	Tungsten, Uranium
105B 075	HANK	Unknown	Anomaly	Unknown
105B 076	MARK	Unknown	Anomaly	Unknown
105B 077	PIRE	Vein Polymetallic Ag-Pb-Zn-Au	Anomaly	Copper, Lead, Zinc, Silver
105B 078	VERLEY	Porphyry W	Showing	Copper, Silver, Molybdenum, Uranium, Tungsten, Tin, Thorium
105B 079	GRASS	Vein and Greisen Sn	Showing	Tin
105B 080	ISLOUCE	Skarn Sn	Showing	Copper, Tin, Zinc, Tungsten, Molybdenum
105B 081	DYME	Vein and Greisen Sn	Showing	Tin
105B 082	PONT	Skarn Sn	Anomaly	Tin
105B 083	SN	Porphyry W	Showing	Tin
105B 084	DU	Vein and Greisen Sn	Showing	Tin
105B 085	TIN	Skarn Sn	Showing	Tin, Tungsten
105B 086	CUSP	Ordnance Prospect	Ordnance Prospect	Barite, Zinc, Gemstones, Zinc, Tungsten
105B 087	IMPRES	Porphyry Cu-Mo-Au	Prospect	Copper, Silver, Molybdenum
105B 088	SMITH	Skarn Sn	Ordnance Prospect	Gold, Zinc, Silver, Tin
105B 089	FRANKS	Skarn W	Showing	Molybdenum, Tungsten
105B 090	SWIFT	Skarn Mo	Unknown	Molybdenum
105B 091	KAMET	Unknown	Unknown	Unknown
105B 092	SHERMAN	Unknown	Unknown	Unknown
105B 093	RALKS	Skarn W	Unknown	Unknown
105B 094	OLSSON	Unknown	Anomaly	Unknown
105B 095	TAT	Unknown	Showing	Uranium
105B 096	LICK	Vein Polymetallic Ag-Pb-Zn-Au	Showing	Lead, Silver, Zinc, Uranium
105B 097	URP	Skarn W	Showing	Copper, Fluorite, Molybdenum, Silver, Zinc, Tungsten, Lead
105B 098	LITTLE MOOSE	Vein Polymetallic Ag-Pb-Zn-Au	Ordnance Prospect	Copper, Gold, Lead, Silver, Zinc
105B 099	LOGAN	Vein Polymetallic Ag-Pb-Zn-Au	Deposit	Silver, Zinc, Tin, Lead, Copper
105B 100	PETER	Unknown	Ordnance Prospect	Uranium
105B 101	CORDILLERAN	Porphyry W	Ordnance Prospect	Copper, Zinc, Tungsten, Silver, Gold, Lead
105B 102	FRIEER	Vein Polymetallic Ag-Pb-Zn-Au	Ordnance Prospect	Copper, Lead, Zinc, Silver, Gold
105B 103	TRIBALL	Porphyry Cu-Mo-Au	Showing	Showing
105B 104	TEAM	Skarn W	Showing	Tungsten, Zinc
105B 105	STOLLERY	Skarn W	Showing	Tin, Tungsten
105B 106	LESLIE	Skarn W	Showing	Tin, Tungsten
105B 107	MOSGOS	Vein Polymetallic Ag-Pb-Zn-Au	Showing	Lead, Zinc, Silver
105B 108	ROCK	Porphyry Cu-Mo-Au	Anomaly	Arsenic, Silver, Tin, Tungsten
105B 109	CHAKE	Vein Polymetallic Ag-Pb-Zn-Au	Anomaly	Copper
105B 110	LEAF	Unknown	Unknown	Unknown
105B 111	DORSEY	Unknown	Unknown	Tin
105B 112	HOLLITER	Skarn Sn	Anomaly	Unknown
105B 113	STEPHENS	Skarn Pb-Zn	Showing	Lead, Zinc, Silver
105B 114	WESTER RIVER	Manto Polymetallic Ag-Pb-Zn	Ordnance Prospect	Lead, Silver, Zinc
105B 115	CONKAR	Unknown	Unknown	Tungsten, Zinc
105B 116	KANANUK	Unknown	Unknown	Unknown
105B 117	PISTON	Unknown	Unknown	Unknown
105B 118	CHERCHENT	Unknown	Unknown	Unknown
105B 119	KARTUNH	Skarn Pb-Zn	Showing	Lead, Silver, Tin
105B 121	RANKE	Unknown	Unknown	Unknown
105B 122	ARROTT	Vein Polymetallic Ag-Pb-Zn-Au	Showing	Copper, Zinc, Lead, Silver
105B 123	HEAD	Manto Polymetallic Ag-Pb-Zn	Anomaly	Gold, Lead, Silver
105B 124	SILVER CREEK	Vein Polymetallic Ag-Pb-Zn-Au	Prospect	Lead, Zinc, Silver
105B 125	KARWEN	Skarn W	Anomaly	Lead, Silver, Zinc
105B 126	ELECTRICITY	Skarn W	Showing	Lead, Rare Earths, Molybdenum, Uranium, Tungsten, Tantalum
105B 127	VORONKA	Manto Polymetallic Ag-Pb-Zn	Showing	Lead, Silver
105B 128	KR	Vein Polymetallic Ag-Pb-Zn-Au	Showing	Lead, Silver, Zinc, Strontium, Manganese
105B 129	TANANA	Vein Polymetallic Ag-Pb-Zn-Au	Showing	Cadmium, Zinc, Silver, Gold, Lead
105B 130	ROD	Unknown	Unknown	Unknown
105B 131	STACE	Unknown	Unknown	Unknown
105B 132	SCHLEIBENBURG	Vein Polymetallic Ag-Pb-Zn-Au	Ordnance Prospect	Germanium, Lead, Silver
105B 133	GOLDDEX	Vein Polymetallic Ag-Pb-Zn-Au	Unknown	Unknown
105B 134	BRLEN	Unknown	Anomaly	Copper, Zinc, Molybdenum
105B 135	SCURRY	Unknown	Unknown	Gold
105B 136	HAWKINS	Manto Polymetallic Ag-Pb-Zn	Showing	Gold, Zinc, Lead, Silver
105B 137	FARFIELD	Unknown	Showing	Lead, Zinc, Silver
105B 140	TRM	Unknown	Showing	Lead, Silver
105B 141	PASLE	Unknown	Unknown	Gold
105B 142	FOX	Unknown	Unknown	Unknown
105B 143	CONVERT	Volcanogenic Massive Sulphide (VMS) Kuratite Cu-Pb-Zn	Ordnance Prospect	Copper, Silver, Zinc, Lead
105B 144	CANINE LAKE	Volcanogenic Sulphide - type not determined	Showing	Copper

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

Target Deposit Type*	Other Deposit Types*	Mn	Fe	Co	Ni	Cu	Mo	Zn	Pb	Ag	Au	As	Ba	Cd	Sn	Te	Hg	Tl	Bi	W
Polymetallic Ag-Pb-Zn	SEDEX (high Ag); VMS (felsic); Pb-Zn skarn							2	4	3					-1					-2
Porphyry Cu-Mo	Cu skarn; Porphyry Mo; VMS (mafic)					4	4			2					-2					
Intrusion-related Au	Epithermal Au										4	3			-2					1
Epithermal Au-Ag	Intrusion-related Au; Polymetallic Ag-Pb-Zn								3	3	1				-2	1	1			
Pb-Zn skarn	SEDEX (low Ag); VMS					1		4	4	1										2
Sn skarn	W skarn; Pb-Zn skarn							1												2
W skarn	Sn skarn; Porphyry W										1									2

* Polymetallic Ag-Pb-Zn type includes vein and manto styles; SEDEX = sedimentary exhalative; VMS = volcanic-hosted/associated massive sulphide deposits
 1. Au data are not levelled by dominant geology, instead log₁₀ transformed raw data are used.
 2. Hg residual from regression analysis against Loss-on-ignition (LOI)

