



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 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 Stewart River area (NTS 1150 and part of 115N) were collected at a reconnaissance scale in 1986 as part of the Canada-Yukon Mineral Development Agreement (Friske et al., 2001). Field descriptions and initial geochemical data for 1392 sites were released in Geological Survey of Canada (GSC) Open File 1364 and Indian and Northern Affairs Canada, Exploration / Geological Services Division Open File 2001-130. New geochemical data from the re-analysis of archive sample material were released in Yukon Geological Survey (YGS) Open File 2016-4 (Jackman, 2016). The reader is referred to these reports for detailed descriptions of sampling techniques, analytical procedures, and quality control measures.

MINERAL OCCURRENCES
A variety of types of base and precious-metal mineralization have been identified in the Stewart River Area as listed in Table 1 (Yukon MINFILE, 2015). The most significant deposits are classified as orogenic Au (Golden Saddle deposit and O.V. prospect), polymetallic Ag-Pb-Zn (Connaught and Lerner deposits), intrusion-related Au (Moosehorn deposit and Flume prospect), quartz-vein hosted Au (Lone Star and Violet deposits, and Eureka prospect) and Cu-Zn-Pb volcanogenic massive sulphide (Toulary prospect). The Casino Cu-Mo-Au porphyry deposit and Coffee orogenic Au deposit occur in the adjacent map area to the south supporting the prospectivity of the region for these deposit types.

WEIGHTED SUMS MODELING
As described in the methodology report (Mackie et al., 2015), two approaches have been used to substitute the influence of background lithological variation and secondary absorption on the composition of stream sediments. One use data levelled by the dominant geology mapped within each catchment, while the other uses residuals calculated from regression against selected principal components. Weighted sums models (WSM) have been generated using the processed data.

Table 1: List of Mineral Occurrences for NTS map sheet 115N and 115O (Yukon MINFILE, 2015)

Number	Name	Type	Status	Commodities
115N 019	BEAUFORT	Unknown	Anomaly	Copper
115N 022	BUFLER	Porphyry Cu-Mo-Au	Delisted Prospect	Copper, Gold, Silver
115N 023	CHILWICK	Unknown	Anomaly	Copper
115N 025	EAST MILE	Coal	Showing	Coal
115N 028	HEAVY	Unknown	Anomaly	Copper
115N 034	BLACK FOX	Volcanic-hosted Ag-Pb-Zn	Showing	Ag, Pb, Zn, Au, Cu
115N 035	BLACKHORN	Unknown	Anomaly	Copper, Molybdenum
115N 036	BLACKHORN	Unknown	Anomaly	Copper, Molybdenum
115N 037	BLACKHORN	Unknown	Anomaly	Copper, Molybdenum
115N 038	BLACKHORN	Unknown	Anomaly	Copper, Molybdenum
115N 039	BLACKHORN	Unknown	Anomaly	Copper, Molybdenum
115N 040	BLACKHORN	Unknown	Anomaly	Copper, Molybdenum
115N 041	BLACKHORN	Unknown	Anomaly	Copper, Molybdenum
115N 042	BLACKHORN	Unknown	Anomaly	Copper, Molybdenum
115N 043	BLACKHORN	Unknown	Anomaly	Copper, Molybdenum
115N 044	BLACKHORN	Unknown	Anomaly	Copper, Molybdenum
115N 045	BLACKHORN	Unknown	Anomaly	Copper, Molybdenum
115N 046	BLACKHORN	Unknown	Anomaly	Copper, Molybdenum
115N 047	BLACKHORN	Unknown	Anomaly	Copper, Molybdenum
115N 048	BLACKHORN	Unknown	Anomaly	Copper, Molybdenum
115N 049	BLACKHORN	Unknown	Anomaly	Copper, Molybdenum
115N 050	BLACKHORN	Unknown	Anomaly	Copper, Molybdenum
115N 051	LUCKY JOE	Unknown	Delisted Prospect	Tellurium
115N 052	JESMANEK	Unknown	Anomaly	Ag, Pb, Zn, Au, Cu, Pt, Pd, Bi, Sb, Sn, Te, Hg, Ti, Bi, W, V
115N 053	HAVERYACK	Coal	Delisted Prospect	Coal
115N 054	BLACKHORN	Unknown	Anomaly	Copper, Molybdenum
115N 055	BLACKHORN	Unknown	Anomaly	Copper, Molybdenum
115N 056	BLACKHORN	Unknown	Anomaly	Copper, Molybdenum
115N 057	BLACKHORN	Unknown	Anomaly	Copper, Molybdenum
115N 058	POTTERHILL	Unknown	Anomaly	Copper, Silver, Gold
115N 059	FRANK	Unknown	Anomaly	Copper, Silver
115N 060	GOLD RUN	Unknown	Anomaly	Copper, Silver
115N 061	PORTLAND	Unknown	Anomaly	Ag, Pb, Zn, Au, Cu, Pt, Pd, Bi, Sb, Sn, Te, Hg, Ti, Bi, W, V
115N 062	BOURBON	Unknown	Anomaly	Copper, Lead, Zinc
115N 063	LEWIS	Unknown	Anomaly	Copper, Lead, Zinc
115N 064	HARKER COME	Unknown	Anomaly	Copper, Lead, Zinc, Gold, Silver, Antimony
115N 065	RITCHIE	Unknown	Anomaly	Copper, Silver
115N 066	BLUM	Unknown	Anomaly	Copper, Silver
115N 067	JOHN STAR	Unknown	Anomaly	Copper, Zinc, Gold, Lead, Silver
115N 068	JONES STAR	Unknown	Anomaly	Copper, Silver
115N 069	ROBERT	Unknown	Anomaly	Copper, Barite, Lead, Silver
115N 070	LEWIS	Unknown	Anomaly	Copper, Silver
115N 071	BLACKHORN	Unknown	Anomaly	Copper, Molybdenum, Barium, Antimony
115N 072	BLACKHORN	Unknown	Anomaly	Copper, Silver
115N 073	BLACKHORN	Unknown	Anomaly	Copper, Silver
115N 074	BLACKHORN	Unknown	Anomaly	Copper, Silver
115N 075	BLACKHORN	Unknown	Anomaly	Copper, Silver
115N 076	BLACKHORN	Unknown	Anomaly	Copper, Silver
115N 077	BLACKHORN	Unknown	Anomaly	Copper, Silver
115N 078	BLACKHORN	Unknown	Anomaly	Copper, Silver
115N 079	BLACKHORN	Unknown	Anomaly	Copper, Silver
115N 080	BLACKHORN	Unknown	Anomaly	Copper, Silver
115N 081	BLACKHORN	Unknown	Anomaly	Copper, Silver
115N 082	BLACKHORN	Unknown	Anomaly	Copper, Silver
115N 083	BLACKHORN	Unknown	Anomaly	Copper, Silver
115N 084	BLACKHORN	Unknown	Anomaly	Copper, Silver
115N 085	BLACKHORN	Unknown	Anomaly	Copper, Silver
115N 086	BLACKHORN	Unknown	Anomaly	Copper, Silver
115N 087	BLACKHORN	Unknown	Anomaly	Copper, Silver
115N 088	BLACKHORN	Unknown	Anomaly	Copper, Silver
115N 089	BLACKHORN	Unknown	Anomaly	Copper, Silver
115N 090	BLACKHORN	Unknown	Anomaly	Copper, Silver
115N 091	BLACKHORN	Unknown	Anomaly	Copper, Silver
115N 092	BLACKHORN	Unknown	Anomaly	Copper, Silver
115N 093	BLACKHORN	Unknown	Anomaly	Copper, Silver
115N 094	BLACKHORN	Unknown	Anomaly	Copper, Silver
115N 095	BLACKHORN	Unknown	Anomaly	Copper, Silver
115N 096	BLACKHORN	Unknown	Anomaly	Copper, Silver
115N 097	BLACKHORN	Unknown	Anomaly	Copper, Silver
115N 098	BLACKHORN	Unknown	Anomaly	Copper, Silver
115N 099	BLACKHORN	Unknown	Anomaly	Copper, Silver
115N 100	BLACKHORN	Unknown	Anomaly	Copper, Silver

Table 2: Importance rankings for weighted sums models using residuals on principal components

Target Deposit Type*	Other Deposit Type*	Mn	Fe	Co	Ni	Cu	Mo	Zn	Pb	Ag	Au	As	Bi	Ca	Ba	Sr	Sb	Te	Hg	Tl	Bi	W	V	
Porphyry Cu-Mo	Cu skarn; Porphyry Mo; VMS (Cu-rich)					-2	5	3		2	1											2	3	
Polymetallic Ag-Pb-Zn	VMS; SEDEX; Pb-Zn skarn						1	3	4	1	2	-1						1	-1					
Epithermal Au-Ag	Intrusion-related and orogenic Au; Polymetallic Ag-Pb-Zn					1				3	4	1						2	1	2				
Orogenic Au	Intrusion-related Au; Epithermal Au-Ag					1				3	4	2						2						1
Intrusion-related Au	Orogenic Au; Epithermal Au-Ag					1				3	4	-1						1						
W skarn	W porphyry; Intrusion-related Au					1				3	2							-2			1	2	4	

*Polymetallic Ag-Pb-Zn type includes vein and matrix styles; SEDEX = sedimentary exhalative; VMS = volcanic-hosted/associated massive sulphide deposits. For heavily censored elements raw data are used following a log₁₀ transformation.

REFERENCES

Friske, P.W.B., Day, S.J.A. and McCurdy, M.W., 2001. Regional stream sediment and water geochemical reconnaissance data, western Yukon (NTS 115N and 115O), Geological Survey of Canada, Open File 1364 / Indian and Northern Affairs Canada, Exploration and Geological Services Division, Open File 2001-13(D).
Jackman, W., 2016. Regional Stream Sediment Geochemical Data, Stewart River area, Yukon (NTS 115N and 115O), Yukon Geological Survey, Open File 2016-4.
Mackie, R., Arne, D. and Brown, O., 2015. Enhanced interpretation of regional stream sediment geochemistry 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.geology.gov.yk.ca, accessed May 2015.

RECOMMENDED CITATION

MACKIE, R., ARNE, D. AND PENNIMPEDE, C., 2016. Weighted sums model for Epithermal Au-Ag deposits using principal component residuals. In: Enhanced interpretation of stream sediment geochemical data for NTS map sheet 115N and 115O. Yukon Geological Survey, Open File 2016-30, scale 1:250 000, sheet 7 of 13.
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. 867-867-3201, 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>.

Table 1: List of Mineral Occurrences for NTS map sheet 115N and 115O (Yukon MINFILE, 2015)

Number	Name	Type	Status	Commodities
115N 042	BUFLER	Porphyry Cu-Mo-Au	Delisted Prospect	Copper, Gold, Lead, Silver, Molybdenum
115N 043	CHILWICK	Unknown	Anomaly	Copper
115N 045	PROSPECT	Unknown	Anomaly	Copper
115N 046	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 047	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 048	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 049	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 050	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 051	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 052	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 053	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 054	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 055	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 056	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 057	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 058	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 059	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 060	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 061	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 062	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 063	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 064	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 065	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 066	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 067	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 068	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 069	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 070	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 071	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 072	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 073	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 074	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 075	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 076	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 077	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 078	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 079	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 080	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 081	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 082	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 083	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 084	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 085	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 086	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 087	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 088	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 089	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 090	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 091	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 092	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 093	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 094	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 095	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 096	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 097	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 098	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 099	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead
115N 100	BLACKHORN	Unknown	Anomaly	Copper, Silver, Lead