Lee RG, King JJ, Vallée MA, Lesage G, Chouinard RL, Winterburn PA, Hart CJR, Byrne K, Lypaczewskit P, Rivard B, Reman A, Ross M, Grenon C, Chouteau M, Ryan J, Alfaro M, D'Angelo M, Hollings P, Mir R, Gleeson SA, Enkin RJ, Morris WA, 2017, Integration of multiple datasets for the Highland Valley Copper porphyry deposit and Guichon Creek batholith, south-central British Columbia, Abstract, CIM-GAC-MAC, Vancouver, BC

Integration of multiple and varied datasets allows for the development of new proxies and vectors which can be applied to targeting of potential mineralization. In order to evaluate data over a large region, extensive new geological data sets were collected and geophysical surveys reprocessed around the Teck Resources Limited owned and operated Highland Valley Copper deposits. Field mapping and sample collection was conducted over a roughly 40x30 km² area within the late Triassic Guichon Creek Batholith which hosts multiple porphyry copper centres and mineralized showings. Over 1000 samples of both fresh and altered rock types in the region were collected for petrologic and geochemical evaluation. Samples were analyzed for major and trace element chemistry; SWIR; feldspar staining; hyperspectral imaging; petrophysical properties; stable isotopic signature; and selected mineral chemistry. In addition to hard rock sampling, several hundred soil, till, and vegetation samples were collected for chemical analysis. Airborne magnetic and radiometric surveys, as well as ground and airborne gravity surveys, were reprocessed and used to develop a 3D model of the batholith and porphyry centres. Petrologic and field observations were used to define new alteration mineral assemblages of quartz-potassium feldspar-biotite-sulfide-mica adjacent to the deposits and assemblages of albite-white mica-epidote-calcite-tourmaline-prehnite distal from the main mineralized centres. The 3D model, constrained by the lithochemical and petrophysical properties of all the samples, consists of regional lithology, structural interpretation, the alteration assemblages as well as all the analytical data collected for the study. The integrated datasets define features that vector up to twelve kilometers distally from the center of the system.

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