

# From the Mineral Inventory Files

## Are There Prairie-type Au-Ag-Cu Deposits in Northern Nova Scotia?

An interesting article by Hugh Abercrombie (GSC-Calgary) in the May 1996 issue of *The Gangue* (newsletter of the Mineral Deposits Division, Geological Association of Canada) described sediment-hosted, Prairie-type Au-Ag-Cu deposits in the Western Canada Sedimentary Basin. What caught my interest about this recently recognized deposit style is the geological evidence suggesting that these deposits exist in the Carboniferous Cumberland Basin of northern Nova Scotia.

Prairie-type deposits consist of Au, Ag and Cu occurring as microdisseminations of exotic minerals that infill pores, fractures and microveinlets in their sedimentary host rocks. The mineral assemblage is diverse: native metals, metallic intergrowths, natural alloys and compounds of metal-chloride, -sulphide, -carbonate and -oxide. The deposits are associated with regional-scale faults. Currently, the favoured genetic model proposes that Au, Ag, Cu and other metals were leached from the Precambrian basement by highly saline, but oxidized, brines typical of evaporite-rich sedimentary basins. Under these conditions the

metals were soluble as chloride complexes. Precipitation occurred when the brines migrated along faults and porous units into reducing, organic-rich environments.

The geology of the Cumberland Basin compares very favourably with the Western Canada Basin. The map below shows the distribution of many of the Cu-Ag occurrences throughout northern Nova Scotia. These deposits vary from small occurrences up to deposits such as the 300,000 t (1.2% Cu) Canfield Creek copper deposit and past-producers such as the Oliver and the King copper mines. Although these deposits display features of solution-front deposits typically found in redbed sequences, there are many similarities between the classic solution-front and prairie-type models. Perhaps they should be re-evaluated under a slightly different light, especially regarding their precious metal potential.

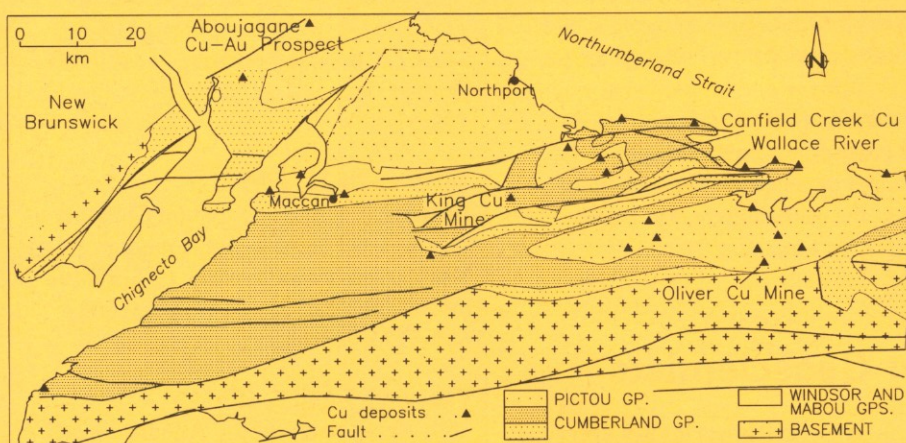
There are several reliable indicators of gold potential in the Cumberland Basin. In 1896 the Canadian Mining Review reported a 40 ton bulk sample from the Oliver deposit near Tatamagouche

yielded "appreciable quantities of Au and Ag along with the Cu". Assays of 0.03-0.18 oz./ton Au and 2-13 oz./ton Ag were obtained from the former King Mine near Oxford and Cu prospects near Maccan. Several prospects along the Wallace River are reported to contain small amounts of Au, Ag and Hg. The Northport, Cumberland County, area is particularly interesting. There are no known Cu or precious metal occurrences in the immediate area, but in 1984 geologist Mike Milner panned Au and Hg from Northport beach at the mouth of the Shinimicas River. In 1986, a Dept. of Mines and Energy geochemical survey reported several samples with anomalous Au in the Northport area, including two that returned 850 and 806 ppb Au from Mud Brook, a tributary of the Shinimicas River immediately upstream from Northport.

A short distance north of Sackville, New Brunswick, sediment-hosted Cu was discovered at Aboujagane in the 1970s. Recently, prospector Emilio Doiron became interested in the site when he realized that holes drilled for Cu intersected intervals with Au concentrations in the order of 0.2 oz./ton. His follow-up prospecting quickly produced a grab sample from one of the trenches with 11.5 ppm Au. The prospect is currently being explored for its gold potential.

Considering that much of the Cumberland Basin is till-covered, the abundance of known mineralized sites is noteworthy. It is reasonable to assume that the abundance of sites in the much larger till-covered area equals that in the exposed sections. Therefore, more deposits remain to be discovered. So, keep an open mind and analyze for Au, Ag, and many other elements.

George O'Reilly



Simplified geological map of the Cumberland Basin showing the locations of copper deposits and major faults.