

CRC LEME OPEN FILE REPORT 181

INTERPRETATION OF SOIL GEOCHEMICAL DATA FROM RAINBOW PROSPECT, NIFTY, WA

Matthias Cornelius

February 2008

ABSTRACT

As part of a pilot study on geochemistry for base metal exploration at Nifty (Cornelius, 2002), the regolith-landform setting at the Bloodwood and Rainbow prospects was appraised during short field visits and recommendations made for an soil geochemical orientation survey. Such a survey was completed at Rainbow Prospect by B. Hooper of Straits Resources shortly after. Fifteen samples were taken across strike of the mineralization that had been intersected from 4 m depth by percussion drilling (30 m @0.3% Cu in two holes). The sample intervals are 40-100 m, samples were taken from 100 mm depth.

Five samples were sieved into eight size fractions by ALS Laboratories (>2000, 850-2000 μm , 600-850 μm , 425-600 μm , 250-425 μm , 125-250 μm , 53-125 μm , < 53 μm) in order to compare their grainsize distributions. The fractions, most dominated by aeolian material, are 125-425 μm . Geochemical analyses were done for the 850-2000 μm , 600-850 μm , 53-125 μm and <53 μm fractions by ICP-MS and AES for 47 elements following a 4-acid digest (ALS Laboratories, Perth, method ME-MS61). The strongest anomaly to background contrast was in the 850-2000 μm and <53 μm fractions and the remaining 10 samples were analyzed for 47 elements in these two size fractions.

Results show a strong Cu anomaly in soil above the bedrock mineralization in both the 850-2000 μm and the <53 μm fractions (480 ppm and 1280 ppm respectively). Either side of the Cu anomaly, Pb peaks at 300-500 ppm. Other trace and main elements are associated with all three peaks (Al, Be, Fe, Ga, K, Li, Mg, P, Ta, Tl, U, V and Zn).

It is recommended that Cu and Pb be used to delineate the regolith expression of bedrock mineralization at Rainbow Prospect and to also analyze for Fe, Mn and Zn. In other areas, use of the full element suite (47) is recommended for first stage sampling to identify all anomalous elements. The most suitable grainsize fraction is <53 μm , because it yields sufficient sample material both in erosional as well as depositional (aeolian cover) areas, and shows a very good anomaly to background contrast for the target element(s). Coarser material (850-2000 μm) gives equally good results in erosional terrain, such as Rainbow, but will not yield sufficient sample material in areas with dominantly aeolian cover. It also fails to show subtle anomalies in other trace elements over all mineralized bedrock units and this may be of significance in other exploration areas.