

MULTI-ELEMENTS TOTAL AND ENZYME LEACH GEOCHEMICAL ANOMALIES RELATED TO THE Cu-Au-Hg OREBODIES OF THE PUNITAQUI, CHILE, DISTRICT, EMPLACED IN A SHEAR ZONE.

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The Punitaqui mining district (30°52'30" S / 71°14'30" W) in the semiarid region of the Coastal Cordillera in central Chile, includes three vein-type, epithermal, low sulfidation metallic deposits, emplaced in the western part of a 200 to 400 m wide NNW trending shear zone. Lower Cretaceous andesitic rocks crops out west of the shear zone and granodioritic intrusive rocks dated at 114 Ma, at the eastern flank. From SSW to NNE, the deposits have been mined for Cu (Delirio), Au-Cu (Milagro) and Au-Hg (Los Mantos). Some 600 m separate Delirio from Milagro and only 100 m, Milagro from Los Mantos, for a total length of the district of 1200 m.

In the context of a structural and metallogenetical study of the district and its geological frame, about 200 soil samples were taken along 25 geochemical profiles, transverse to the shear zone, from 3 Km south from Delirio to 7 Km north from Los Mantos. The soil samples, as well as 25 samples of rocks and 5 of ores from the district, were analyzed for the total content of 48 elements. Also, 59 elements were tested in the soil samples by the enzyme leach extraction technique.

Total Au, Cu, Ag, Hg, Sb and As, as well as "enzymatic" Au and Sb were the best tracers for the non outcropping orebodies of the district, and high gamma ray total count data, are associated to the eastern border of the shear zone. Pb and Zn are consistently low in ores, rocks and soils of the districts. The Culebra hill area, 500 to 1000 m north from Los Mantos presents strong total content and enzyme leach Au and Cu anomalies. They were tested by a drilling programme in 1998, that revealed the presence of Au-Cu orebodies at a depth of 300-400 m.