ABSTRACT

This work presents the geological and hydrogeological surveys and the evaluation of the mineral potential of the Criciúma Sheet (SH. 22-X-B), in the southeastern region of the Santa Catarina State, displayed in geological, hydrogeological and metallogenic/previsional maps at the 1:250 000 scale. The granitic rocks, related to the Dom Feliciano Belt in the Santa Catarina Shield, were divided in three lithological domains (Granitic-Gneissic Complex and Pedras Grandes and Cambirela suites), related to the Neoproterozoic and Cambrian ages. The other tectonic-geological units comprehend the Paraná Basin and Cenozoic deposits. The Granitic-Gneissic Complex includes syntranscurrent granitic and gneissic rocks named Santa Rosa de Lima, Santo Antônio and Paulo Lopes granitoids. The granitic suites comprehend Neoproterozoic late- to post-transcurrent bodies (Imaruí-Capivari, Serra do Tabuleiro, Treze de Maio, São Bonifácio, Jaguaruna and Barra da Laguna granites, and Rio dos Bugres quartz diorite of the Pedras Grandes Suite) and Cambrian post-tectonic granitic rocks (sub-volcanic Rio Chicão Granite and rhyolitic/rhyodacitic dykes of the plutono-volcanic Cambirela Suite), with dimensions from stocks to batholites. The Paraná Basin includes sedimentary deposits and the Serra Geral volcanic event, both generated in the Permian to Cretaceous ages. It is represented by the Itararé Group (Rio do Sul Formation), Guatá Group (Rio Bonito and Palermo formations), Passa Dois Group (Irati, Serra Alta, Teresina and Rio do Rasto formations) and São Bento Group (Botucatu and Serra Geral formations). The continental, transitional and marine deposits of the Cenozoic covers represent, in their major part, the emersed northern portion of the Mesozoic-Cenozoic Pelotas marginal basin, and constitute the southern Santa Catarina Coastal Plain. This plain evolved throughout two sandy barriers, Pleistocenic and Holocenic in age, linked to the glacio-eustatic changes of the Quaternary sea level. The recording of 139 water points allowed the characterization of ten aquifer systems that can be assembled into three categories (grained, fractured and intergrained/fractured aquifers) and led to the delimitation of the groundwater supply, the local relative hydrogeological importance, the vulnerability and the general conditions of the exposed areas of these systems. The major water supplies are related to the coastal sandy sediments, whereas the Rio Bonito and Rio do Sul formations display high values of specific capacity. In the coal mining areas was a serious spoiling of the water quality due to the acidification and the income of deleterious material. The main mineral resources are the coal with coking properties and fluorite veins that constitute more than 50% of the Brazilian production, as well as several deposits of ceramic clays, calcareous shells and raw material for construction purposes. The integration of the geological, geophysical, mineralommetric and mineral resources records led to the delimitation of three areas for further prospection and mineral exploration of coal (area I), hydrotermal fluorite (areas IIa to g) and barite (area III), not associated to fluorite.