

## **EXECUTIVE SUMMARY – BOM JARDIM PROJECT**

### **Summary**

The Decree-Law No. 764, of August 15, 1969, authorized the formation of the Mineral Resources Research Company - CPRM, in the form of a mixed economy company, with the objective, among others, of conducting mineral research with a view to stimulating the discovery of new deposits and the intensification of the use of the country's mineral and water resources.

However, CPRM's activities in mineral exploration activities were practically ended in the 1990s. The edition of Constitutional Amendment No. 6/1995 allowed the opening of the mining sector to foreign capital, there was a substantial increase in private investments in mineral research, eliminating the performance of this function by CPRM. In addition, Law No. 8,970, of December 28, 1994, transformed CPRM into a public company and changed its corporate objects, so that CPRM started to perform mainly the function of Geological Service in Brazil and stopped acting in the execution of mineral research itself.

Until its transformation into a public company in 1994, CPRM developed several mineral research projects in order to identify and quantify new deposits in the Brazilian territory. Considering the potential economic use of these mineral resources, the Federal Government decided to negotiate some of these assets of CPRM by entering into a contract with private partners, which will enable the continuation of these mining projects, with the consequent generation of new jobs, increased income and in the collection of public revenues.

### **Location**

The Bom Jardim cooper Project is located on South of Bom Jardim de Goiás city, on West portion of Goiás state, near the border with Mato Grosso state. The main access, from Goiania (Goiás state downtown) is from GO-060 railway until Piranhas city (320 km), and then, from BR-158 to Bom Jardim de Goiás city (49 km).

The mineral right (ANM n° 812.488/74) of this project has 1.000 acre. The CPRM worked on mineral research during 70<sup>th</sup> and presents to Mining Regulatory Agency (ANM) the final exploration results report on 1980. After that, no more exploratory studies on this area have been made. CPRM has authorization from ANM to continue the mineral exploration studies until today ensured by Exploration License n° 4.492, published on the Official Gazette (DOU) on 07/24/1980.

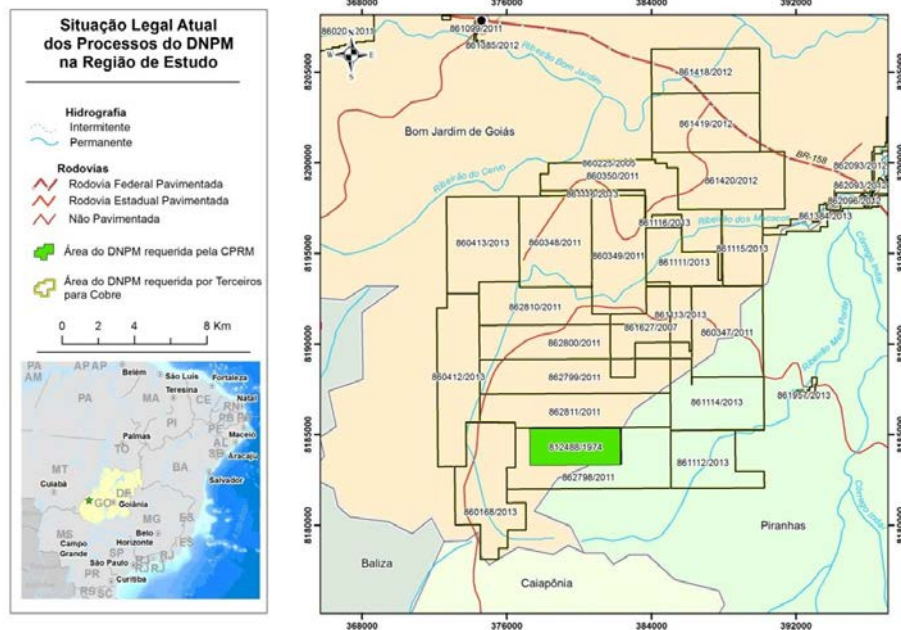


Figure 02 – Mining Right n° 812.488/74 location

A brief environmental diagnosis carried out internally by the CPRM team indicates that the area is, in general, anthropized mainly by livestock production.

No relevant environmental aspect was identified, relating to physical, biotic or socioeconomic means, which could be characterized as an impediment to the exploitation of the copper deposit. However, this diagnosis is preliminary and more specific studies are needed, as recommended by Brazilian environmental legislation.

It is also emphasized that mitigating and compensatory measures should be applied to the impacts defined in the subsequent studies.

## Geology

The Bom Jardim deposit region is geologically inserted in the eastern portion of the Tocantins Province, interpreted as resulting from the convergence of the São Francisco and Amazonian cratons in the Neoproterozoic. It is inserted in the western edge of the Arenópolis Magmatic Arc, south portion of the Goiás Magmatic Arc.

The metavolcanosedimentary rocks that occur in this region were grouped in the Bom Jardim de Goiás Group by Seer (1985). Regionally, the metavolcanosedimentary sequences are constituted by metavolcanic rocks with associated subvolcanics, with a composition varying from tholeiitic basalts to rhyolites, which underwent metamorphism in schist-green and amphibolite facies. In the upper units of these sequences, detrital metasedimentary rocks were identified mainly.

Mineralization occurs in the metatufos of the Córrego da Aldeia Formation of the Bom Jardim de Goiás Group and is associated with a system of venules and veins and, subordinately, hydrothermal gaps with varying concentrations of sulphides, reaching, locally, massive characteristics. Sulphides, when disseminated, occur in small

concentrations in the tuft matrix and do not form bodies of economic interest. It is noteworthy that, on the surface, gossans are found locally.

Apparently, Bom Jardim deposit represents the stockwork area of a volcanogenic deposit, deformed and reoriented according to the deformations that were superimposed on it.

### **Geological Exploration**

At the Bom Jardim Project, intense mineral research work was carried out during 70<sup>th</sup> decade, including sampling of current sediments, soils in regional, detailed geophysics studies (magnetometry, IP, VLF) and 40 diamond drillholes.

Geochemistry studies showed some anomalies defined in soil meshes for Pb and Zn and presented during the work point out new areas of favorability for deposit and mineral occurrences with structural control, conditioned to the great N-S lineament, limited, however, to specific geological units.

Terrestrial geophysics, whose scope is restricted to the most relevant targets defined at the time, demonstrates that the lithological units are essentially aligned in the NNE direction, as defined from magnetometry. In disagreement, the direction of the conductors defined in the IP and VLF, which possibly coincide with the direction of the sulphide mineralizations, is mainly aligned in the N-S direction. This is the main direction, both for the regional shear zones and for the axis of greatest elongation of the ore body, which would indicate strong structural control of mineralization.

On the most significant targets, 40 drill holes were drilled between 07/31/1976 and 03/28/1978, totaling 8,001.5 m, distributed in four different targets. Of these 40 holes, 29 holes drilled in Target 01 (Capibaribe) were used in modeling and resource estimation, totaling 6,725.40 m.

### **Mineral Resources**

Recently, CPRM carried out the reinterpretation and reevaluation of the geological model of the Bom Jardim deposit within the process area 812.488/1974.

Geological modeling and resource estimates involved work on organizing drilling data (29 holes), importing holes, interpreting sections, developing a three-dimensional model by linking the geology of the area (Figure 03) and estimating resources (Figure 04), all of these steps being properly presented in the body of the internal report “REPORT OF THE MINERAL HERITAGE REVIEW - COBRE DE BOM JARDIM PROJECT - December 2017”.



The consultant concludes that the Cobre Bom Jardim Project is not mature enough to be implemented due to its current resources, technical and economic conditions. It is understood that the project is still in a stage of transition from the level of Desktop Study to Economic Pre-Feasibility. On the other hand, in view of the still open potential of the

project and presence of the cobalt and gold by-product in quantities that may enhance the deposit and not study properly, it is understood that it can become an exploration target of interest.

In this sense, GE21 concludes that the project is an exploration prospect for development in two phases, the first being complementary research with a minimum initial investment and with an option to withdraw, the second, in case of positive results, for the implantation of a mineral enterprise.