EFFECTS OF GEOLOGY AND GEOLOGICAL STRUCTURES ON THE DISTRIBUTION OF GOLD IN THE NYANZIAN SYSTEM (MACALDER GOLDFIELD)

A quantitative analysis of mineral deposit distributions in relation to their proximity to a variety of structural elements is used to define parameters that can influence ore deposit endowment, deposit location and the resource potential of a region. The Nyanzian is the oldest rocks in the country (Kenya) with ages over 2,500 million years. It lies in the western part of Kenya. The total thickness of the Nyanzian System has been estimated at 7500 m, according to Grantham, 1945. Macalder goldfield mine is located in Migori County, which lies in the western part of Kenya and fall under the Nyanzian system of the Archean age.

Given the high economic value of Gold and its economic effect on the local people or on the small scale miners, there need to initiate ways to efficiently increase production making considerations to the effects of prospecting and mining to the environment. This project therefore, provides information on, how the geology i.e. the rock types and the geological structures, for example gossans, and metamorphic structures affects the distribution of Gold the Nyanzian system, thus in effect reducing the environmental degradation, taking Macalder goldfield as the reference point of the project.

The Nyanzian System consists of a succession composed of, from top to bottom: a greywacke and andesitic volcanic group with abundant banded iron formations; an intermediate group composed of rhyolites with intercalated tuffs and agglomerates and a basal unit composed of marie volcanic rocks (pillow lavas and flows) with some (rare) banded ironstones (Shackleton, 1946), they are moderately metamorphosed in the greenschist facies.

This survey therefore takes into considerations past geological reports of the area and determine how these different rocks that acts as the host rocks for the gold mineralisations or different gold ores and their relation to the geological structures in the area of study. This is achieved by a combination of geological and structural mapping from previous geological reports, journals and research papers on the Nyanzian system and also geological data from the ministry of Mines and Natural resources.