

Abstract

Self-potential method is based on the surface measurement of natural potential resulting from electrochemical reactions in the subsurface. It does not require electric currents to be injected into the ground as in the resistivity and induced potential methods. This method has been used in base metal exploration to detect presence of massive ore bodies, in contrast to the IP method which is used predominantly to investigate disseminated ore bodies. One of the most important applications of self-potential is detection of fluid flow thereby making it a complimentary technique in field applications involving fluid flow, fracture leakage detection and pollutant migration, among others. The study was carried out with the aim of investigating the underground water around Mungoni area, Tharaka Nithi, Kenya. The population within this area is growing rapidly due to the increase in the number of learning institutions; this poses a high demand for clean water for domestic use and for agricultural use. The data was collected using resistivity Terrameter and a GPS probe for recording the space coordinates of the data stations. The data analysis was conducted using Surfer 11 computer application software. From the data interpretation it was concluded that groundwater is present in Mungoni area and extents from a depth of 100 meters to 180 meters and is reliable for commercial use.