

Effects of Geothermal Systems in groundwater quality of some of the areas of the Ethiopian Rift Valley(ERV)

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Geothermal systems are rock water systems containing high temperature water. These systems are known to occur in favorable geological situations within the top few Kms of the earth's crust. Existence of magmatic heat sources, reservoir rocks, recharge areas and cap rocks are the favorable conditions. There are widespread geothermal activities in the Ethiopian rift valley owing to the existence of the favorable conditions. So far about eighteen areas within the ERV have been identified to have active geothermal systems.

Mixing of cold groundwater with thermal waters rising from depth in the geothermal areas of the ERV has affected locally the chemistry and physical parameters of the surrounding groundwater. Changes induced by the thermal water circulation include rise of; temperature, pH, chloride, sulfate, TDS, sodium, fluoride etc. values of the ground water. These changes have an impact in the ground water quality.

The thermal water circulations are restricted along young structural zones close to Quaternary volcanic centers. A clear understanding of the hydro geological – hydrothermal situation of thermal areas proves to be an important factor to avoid hydrothermal pollution of ground water well siting.