

Paper Number: 3023

**Groundwater Potential Zoning in Turkana County, Kenya —
A lithological and Structural geology approach**



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Characterizing the permeability structure in groundwater exploration requires collection and integration of structural geological data and background geology and present-day stress field. A methodological combination of field-based structural geology with lithological formation helps to identify geologic controls on permeable zones and overall flow patterns. The Turkana region is generally formed of primarily metamorphic formations in which groundwater occurrence is mostly controlled by geological structures. Mapping of these structural controls helps to define the role that groundwater can play in regional water supplies. Turkana County boreholes are largely drilled along fault zones that also control surface water flows. Most boreholes occur along river channels. By using rock exposures studied by geological field mapping and geological structures studied by both field mapping and remote sensing, geological formations and structures have been mapped to estimate the potential for groundwater development. The analysis from Turkana County reveals a range of major lithological formations including basement rocks mostly of metamorphic nature as well as igneous rocks of both volcanic and plutonic nature and sedimentary rocks. Groundwater potential varies from high to moderate to low and even poor groundwater potential. It is fundamental to note that groundwater in the basement system is highly depended and controlled by geologic structural occurrence and orientation.

