

**Groundwater assessment and management in Singida municipality,
central Tanzania**

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The assessment and management of groundwater resources of the Singida municipality aquifers was carried out using hydrogeological and geophysical methods. The aquifer was delineated using the present and previous data. Hydrogeological and geophysical investigations were employed to determine groundwater development potential areas, aquifer types and their aerial extent. Quantitative estimation of groundwater recharge was carried out using Saturated Volume Fluctuation (SVF) and Chloride Mass Balance (CMB) methods. The SVF gave a value of 3mm/year; the CMB produced results of between 1.92 and 5.89 mm/year; the linear regression model gave 3.48 mm/year of the long term mean annual precipitation of 656 mm for the Singida municipality. Present groundwater management and proposed options are based on the borehole characteristics in conjunction with the demand. Water demand for Singida Municipality stands at 17,100 m³/day and the current water supply is 8,600 m³/day. It was established that low discharge and high water level drawdown of boreholes in Singida municipality is not due to aquifer characteristics but a result of their design and construction methods. The small size of inside casing diameter, pump positions and aquifer screening limits their performance which leads to low discharge and high drawdown. Proposed sustainable water supply alternatives/options are initiation of groundwater monitoring networks, rehabilitation of abandoned boreholes, limiting withdraws, artificial recharge, earth dam construction, development of new well fields and water importation.