

**THE IMPACT OF GEOLOGY AND PIT LATRINES ON GROUND WATER
QUALITY OF SOME BOREHOLES, WELLS AND SPRINGS IN KWALE
DISTRICT, KENYA**

BY

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ABSTRACT

Dissolution of rocks and infiltration from pit-latrines can cause pollution of groundwater. In this study, TDS, TSS, conductivity, COD, BOD, dissolved oxygen, calcium, magnesium, sodium, potassium, sulphates, chlorides, fluorides, coliform counts and E. coli as well as pH and temperature, were determined from selected boreholes, springs and wells in Kwale District, underlain by either sandstones or coral limestone. Water samples were taken from each of the water sources between September, 1993 and November 1993 which represented the wet season. (Short rains) and between January 1994 and February 1994 which represented the dry season.

Data for the two seasons, when compared, showed a slight increase in mean concentrations during the dry season for most parameters i.e. Conductivity, TDS, Cl⁻, F⁻, Ca²⁺, sulphates with means 706.7, 487, 175, 0.3, 74, 10.4 respectively.

The pH showed no change, with a mean of 6.63, while dissolved oxygen, COD, BOD, and coliform counts showed a decrease with means 0.64, 151, 1.66 and 160.5 respectively.

Analysis using trilinear plots showed the major anions as chlorides and bicarbonates while the major cations are calcium and sodium.

The safe distance to locate a pit-latrine from a water source in sandstone regions is recommended to be approximately 120m, while in limestone regions it is at least 150 m.