

# **Assessment of Groundwater Quality in Ahanta West District of the Western Region**

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**2010**

## **ABSTRACT**

This study was undertaken to investigate the quality of groundwater in selected communities in the Ahanta West District in Western Region. The inhabitants of the district depend largely on groundwater sources; hand-dug wells and boreholes for their water needs including drinking. Water samples were analysed to assess the physico-chemical and bacteriological characteristics. A socio-economic survey was also undertaken by way of questionnaire administration, interviews and observations to ascertain perceptions of inhabitants in the communities especially their knowledge on environmental issues and the possible effects of groundwater quality on their lives.

The mean values of some of the parameters sampled are as follows:

The mean conductivity of water samples taken from a well at Apowa in both the dry seasons and wet seasons (2003.7 $\mu$ S/cm and 1978.5 $\mu$ S/cm respectively) were above the background conductivity of 50 $\mu$ S/cm to 1500  $\mu$ S/cm.

The DO values obtained for all the sampling sites and also for the dry season (3.6mg/l) and for the wet seasons (2.2mg/l) were below the WHO guideline value of 5.0mg/l for drinking water quality standards.

The pH values of 5.83 for dry season and 5.75 for the wet season for a borehole at Dixcove site were below the WHO guideline value of 6.5 – 8.5 and EPA permissible value of 6.0 -9.0 making the water mildly acidic.

The nitrate levels obtained at BBW (11.00mg/l) in the wet season was marginally above the WHO drinking water quality guideline of 10.00mg/l. The phosphate concentrations recorded for this study were higher than WHO recommended guideline value.

The levels of faecal coliforms recorded were within the World Health Organisation (WHO), Ghana Water Company Limited (GWCL) and Ghana Standard Board (GSB) permissible level of 0 per 100ml for drinking water quality but were presence of total coliforms of > 8 per 100ml in water at some of the sampling sites during the period of study.

The high levels of phosphate, low levels of DO and the presence of total coliforms in water sources at some sites could be due to poor sanitation practices by inhabitants. It is

recommended that there should be regular monitoring of groundwater quality, the need to educate the inhabitants on environmental issues and priority ought to be given to waste management practices in the communities in order to avert any future problems arising out of water quality issues.

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