The physical, trace element and microbiology of groundwater randomly collected from four boreholes namely (BH3,

BH5, BH103 and BH105) at Nkawkaw in the Eastern Region of Ghana were examined by comparing it to the Ghana

standards for drinking water using various standard methods of analysis and the results were compared to the Ghana

standards in 2011. The microbiological data indicated that the water from all the boreholes surveyed was safe for

drinking since no thermotolerant colifom bacteria were detected in them. Although the results revealed evidence of

minimum physical variations in terms of colour (0.67 Pt. Co - 61.0 Pt. Co), conductivity (819µs/cm - 1052µs/cm)

and turbidity (0.59 NTU - 23.5 NTU), as well as relatively higher manganese (0.038mg/L - 0.638mg/L) and

aluminum (0.064 - 0.479mg/L) concentrations in some boreholes, the values obtained were generally acceptable

when compared to the Ghana water Company's Standards and WHO Guideline values. The boreholes with high

levels of manganese were all located in the same area which signified a possible rock mineral and groundwater

interaction. Additionally, nitrogen concentration was found to be within the acceptable limits according to Ghana

Water Company's Standard even though at $p<0.05$, both forms of nitrogen (ammonium and nitrate), showed

significant difference ($p<0.00094$) among their corresponding means (0.058, 0.054, 0.072 and 0.060) mg/L in BH3,

BH5, BH103 and BH105 respectively. Frequent monitoring programmes and education are recommended to ensure

implementation of safe water plans for the Nkawkaw area where tapping of groundwater from richer aquifer reserves

appears unavoidable.

Keywords: Groundwater, Nkawkaw, Borehole, Ghana Water Company, Bacteria, Physico-chemical, Traced Metal