

Physicochemical and Bacteriological Assessment of Water Resources in Ughelli and Its Environs, Delta State Nigeria

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Abstract : Groundwater samples were collected from Otovwodo-Ughelli and Environ with the aim of assessing groundwater quality of the area. Twenty (20) water samples from Boreholes (BH) (six) and Hand Dug Wells (HDW) (fourteen) were randomly sampled and were analysed for different physicochemical and bacteriological parameters. The following 16 parameters have been considered viz: pH, electrical conductivity, temperature, total hardness, total dissolved solids, dissolved oxygen, biological oxygen demand, phosphate, sulphate, chloride, nitrate, calcium, sodium, chloride, magnesium, and total suspended solids. On comparing the results against drinking quality standards laid by World Health Organization and Nigeria industrial standard, it was found that the water quality parameters were not above the (WHO, 2011 and NIS, 2007) permissible limit. Microbial analysis reveals the presence of coliform and E.coli in two hand-dug well (HDW7 and 13) and one borehole well (BH20). These contaminations are perhaps traceable to have originated from human activities (septic tanks, latrines, dumpsites) and have affected the quality of groundwater in Otovwodo-Ughelli. From the piper trilinear diagram, the dominant ionic species is alkali bicarbonate water type, with bicarbonate as the predominant ion ($\text{Na}^+ + \text{K}^+$)- HCO_3^- .

Keywords : groundwater, surface water, Ughelli, Nigeria industrial standard, who standard

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