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Determining the occurrence of freshwater in the aquifers of the deltaic formation, Niger delta Nigeria

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The study attempted to determine the occurrence of freshwater in the aquifers of the Deltaic Formation, Niger Delta Nigeria using Lithologic Logs, Electrical Resistivity and Borehole Parameter (Depth) as input data. The Geographical Information System technique that permit diverse geospatial analyses, modelling and data manipulation and Simple Regression Method that permits the assessment of relationship between two variables were adopted in this study. The modelled Geological Sequence revealed that the geology of the study area is very complex and consists mostly of unconsolidated sedimentary materials from top soil to the deep horizon. Hence, all the aquifers have very high storage capacity. It was revealed that the nature of resistivity does not significantly increases with depth, which indicates lower level of salinity with increasing depth of hole. The study identified three distinct aquifers (shallow, intermediate and deep) within the Deltaic Formation. The study also emphasized the occurrence of near surface overlying aquitards in the eastern part of the study area, indicating that shallow aquifers of the eastern part are less vulnerable to near surface contamination. Finally, the study concluded that, in most cases, groundwater quality increases as the depth of well increases within the study area.

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