Identification of lithology units and Aquiferous Zones using Combine Electrical Resistivity Log with Gamma in Ikeja, Lagos State, Nigeria.

## INTRODUCTION

Water is life,without water life cannot be sustained, it is vital to human and it is the fluid that lubricate the working of cell in living things.Most rocks contain several pores known as Interstices that retain water,the interstices act as a water storage and passage.The subsurface water in interstices that are fully saturated are known as Groundwater, while subsurface water above saturation zone is known vadose water.The groundwater can only be accessible if the rocks in the saturation zone are well porous to supply sufficient water to its outlet.One of the ways of obtaining groundwater is drilling of borehole,which involves drilling of holes deeply into the ground and clearing the debris that converge from the drilling to access the underground water.Geophysical well logging also known as borehole geophysical log, involves all techniques of lowering sensing devices in a borehole and recording physical observation that is related to the rock,the contents of the rock and the construction of the well.Geophysical logs can be used to determine the resistivity,lithology,geometry,formation resistivity factor,e.t.c.Moreso, to determine the movement,source,physical and chemical properties of the water.Continuous recording values from well to well at different period can also be obtained using Geophysical well logging,if the instrument calibration is accuracy.Logs are majorly used in groundwater hydrology to define the lithology and geometry of aquifer systems,more so,to estimate the quality of groundwater.The resistivity of a material is the measure of the amount of opposition the material can resist electric current.The electrical resistivity of a formation is directly proportional to the quantity,quality,distribution and nature of the formation water,since all these parameters are varies from one formation to another,measurement of resistivity in a borehole can be used to determine formation boundaries and details on the nature of the beds transversed by the drill.Resistivity logging instruments measure the electrical resistivity of a known volume of earth materials under the application of either electric current or induced electric current.

## PROBLEM STATEMENT

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## JUSTIFICATION

## AIMS AND OBJECTIVES

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## SITE DESCRIPTION AND GEOLOGY

The area falls completely in the Dahomey Basin,Ikeja,Lagos state,Nigeria.The geology of the area is underlain by sedimentary rocks with no basement outcrop.The Dahomey Basin was formed following the break-up of the African and South American plates and it is partially separated from the Niger Delta and the Eastern Nigeria sedimentary basin by a bridge of crystalline rocks.

## LITERATURE REVIEW

## RESEARCH METHODOLOGY

Twenty (20) composite geophysical well logs will be obtained from twenty borehole locations in Ikeja,Lagos state, Nigeria.The composite log has resistivity and gamma ray measurements.The GPS coordinates will be gotten in UTM units showing the northing, easting and elevation of the location above sea level.The cutting will be collected at an interval of three (3) metres in the well bore, then finally wash and pack in a bag.In this research, a lithology detection log (resistivity) will be employed to interpret the subsurface deposition of the wells. The subsurface layers (sand and clay) will delineate and correlate stratigraphically.Delineation into aquifer horizons would be done from one well to another using lithologic logs and would be supplemented by geophysical logs.Interpretation of well logs involves choosing best models from the given data to obtain viable geological results.Borehole logging interpretations are always qualitative and quantitative analysis,but only the qualitative analysis will be employed for facies analysis.The qualitative interpretations involve identification of sand units from selected top sand to the last water bearing sand using gamma ray log, classification of the sand that contain aquifer of relevant geological formation that are close in proximity to it, so to identify water-bearing sand from fresh water sand.A baseline would be drawn on the gamma log which is in the middle between maximum and minimum gamma signals.

## TIME FRAME AND ANALYSIS

## COST ANALYSIS

## EXPECTED CONTRIBUTION