

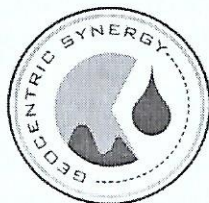


**GEOPHYSICAL & HYDROGEOLOGICAL SURVEY
REPORT FOR THE CONSTRUCTION OF ONE (1.No.)
PROPOSED MOTORIZED BOREHOLE AT
MUNICIPAL LOCAL GOVT AREA,
KANO STATE.**

**CLIENT:
SERENDIPITY HEALTHCARE FOUNDATION**

**CONTRACTOR:
MAIHALI DRILLING COMPANY NIG. LTD.**

SURVEY CONDUCTED BY:



GEOCENTRIC SYNERGY NIG. LTD

LOCATION	DEPTH(m)	REMARK
GSS KARAYE NNDC QUARTERS	50	GOOD YIELD

MAY, 2021

GEOPHYSICAL SURVEY

INTRODUCTION

1.1 AIM:

The aim of the investigation is to ascertain the ground water resources potential within the area, hence the need to conduct a thorough geophysical investigation.

The information supplied is expected to assist the Hydro-geologist and the Drillers to economically sink the proposed borehole (s)

1.2 PURPOSE: PUBLIC USE

1.3 CLIENT: The client that is responsible for the construction of this project is SERENDIPITY HEALTHCARE FOUNDATION

1.4 CONTRACTOR: The contractor that is undertaking this geophysical Survey is MAIHALI DRILLING COMPANY NIG. LTD.

2.0 GEOLOGY/HYDROGEOLOGY

Based on the general geological setting of Northern Nigeria, the area is underlain by Precambrian Basement complex of Nigeria, a Jurassic Younger Granitic Rock and a Sedimentary Formation. The Topography of the state is generally flat-lying. Rocks in this terrain include; Granitic rock/or undifferentiated basement complex which comprises of Migmatites Gneiss Complex, Phylitte, and older Metasediment.

Post tectonic folding and fracturing are common in this area. The aquifers of Basement complex exists within weathered/ fractured zone. Where the thickness and porosity is sufficient to allow economic withdrawal of water. There are two main aquifer types in the study area. The weathered overburden and fractured crystalline aquifers. These two types of aquifers are usually interconnected.

3.1 GEOPHYSICS

The reconnaissance survey and the actual fieldwork took place in MAY, 2021. The method used was the Vertical Electrical Soundings (VES) at the suitable points of the predetermined site. Tetrameter SAS 300B instrument was used to carry the resistivity measurements in the field based on the Schlumberger configuration. The maximum half-current electrode spread (MN/2) at each investigation point is 400m while the half-potential electrode separation (AB/2) was maintained between 0.5 and 20m. This was to provide more detailed hydro-geological and structural information about the aquifer system in the study area to a depth of about 400m. The resulting resistivity data were then tabulated and plotted as curves of apparent resistivity in ohm-Meters against electrode separation (AB/2) in meters; from where it was further analyzed using computer software (IX1D) to estimate the layers depth and thickness. The results obtained from the analysis of indicate that the aquifer system in the study area is promising for tapping the groundwater for water supply.

3.2 SUMMARY OF RESULTS

From the analysis and interpretation of the field data, we therefore arrived at the following inferred lithology as tabulated below. The obtained apparent resistivity values were improved upon using known software 'IX1D'

LOC	LAYERS	RESISTIVITY (ohm-meter)	THICKNESS (meter)	LITHOLOGY
VES11	1	45	0 - 15	Top Soil + sand
	2	60	15 - 32	Decomposed zone
	3	65	40 - 60	Weathered ROCK

The above survey interpretation showed three geo-electric layers in the areas investigated. Thus the above VES'S points showed a **GOOD** prospect points for ground water exploration.

3.4 CONCLUSION AND RECOMMENDATION

Based on the interpretation of the field data, Drilling shall commence at the above VES Points as recommended above, or where the target aquifer/fresh bed rock is encountered. The above recommendation is without prejudice to geological phenomena in terms of quality and quantity of the borehole water.

It is pertinent to note that, the values obtained from this survey do not indicate specific yield or re-charge until it is drilled. But rather an indication for ground water occurrence. The borehole should therefore be hanged after drilling due to the nature and values of the area.