

Integrated geophysical techniques from ground water exploration in lesser Himalayan Region: A case study of Haripur region

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Abstract

The present study incorporates VES and borehole data to evaluate the depositional environment, to identify recharge zone and to locate suitable sites for ground water exploration. The study area lies in Haripur located 160km Northwest of Peshawar. VES (vertical electrical sounding) data was acquired by using Schlumberger configuration at selected locations. The result were later on correlated with available bore holes. On the basis of interpreted sounding results, five geo-electrical cross section have been generated along the profile A-A/, B-B/, C-C/, D-D/, E-E/, F-F/, G-G/. Among all cross section, the three major layers have been identified; these layers consist predominantly of clay, sand and gravel. The geo-electrical resistivity of the layers containing ground water ranged between 56 to 291 Ω m. Several unconfined aquifers have been identified in all the cross-sections with average thickness of 15m to 25m through which water can be extracted economically for a long period of time. The cross-sections represented deposition of coarser sediment near the foot hills and the finer sediments as we move away from the foot hills. Three recharge zones have also been identified on the cross sections A, E and G which are in accordance with the field observations. Overall depositional environment to be interpreted is fluvial representing low and high energy conditions of stream.