

Quaternary Aquifer Transmissivity Derived from Vertical Electrical Sounding Measurements in the Semi-arid Khanasser Valley Region, Syria

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Abstract

Vertical electrical sounding technique (VES) is used as an alternative approach to pumping test for computing the Quaternary aquifer transmissivity in the Khanasser Valley, Northern Syria. The method is inexpensive, easy and gives faster results with higher special resolution than the traditional pumping technique. The hydraulic conductivity values obtained using VES agree with the pumping test results, which in the Khanasser Valley vary between the order of 0.864 and 8.64 m/day (10^{-5} and 10^{-4} m/s). The probable location of the Quaternary aquifer in the Khanasser Valley is obtained through the transmissivity map derived from VES. The knowledge of transmissivity is fundamental for modeling and management processes in the Khanasser Valley. Other similar semi-arid regions can benefit from the approach successfully applied in the study area.

Key words: semi-arid region, pumping test, hydraulic conductivity, Khanasser Valley, Syria.