

## Using Vertical Electrical Soundings Data to Investigate and Assess Groundwater Resources for Irrigation in the Canal Command Area

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**Abstract :** Intense hydrogeological research has been prompted by the rising groundwater demand in typical hard rock terrain. In the current study, groundwater resources for irrigation in the canal command of the Jayakwadi Reservoir in the Indian state of Maharashtra are located using Vertical Electrical Soundings (VES). A Computer Resistivity Monitor is used to monitor the geoelectric field (CRM). Using Schlumberger setups, the investigation was carried out at seven different places in the region. Plotting of the sounding curves is the outcome of the data processing. The underlying layers and groundwater potential in the research region have been examined by analyzing these curves using curve-matching techniques, also known as partial curve matching. IPIWin2 is used to examine the relationship between resistivity and electrode spacing. The resistivity value in a geological formation is significantly reduced when groundwater is present. Up to a depth of 35 meters, the resistivity readings are minimal; beyond that, they continuously increase, suggesting a lack of water in deeper strata. As a result, the wells may only receive water up to a depth of 35 meters. In addition, the trap may occasionally fracture at deeper depths, retaining a limited amount of water in the cracks and producing a low yield. According to the findings, weathered basalt or soil make up the top layer (5-10 m), which is followed by a layer of amygdaloidal basalt (10-35 m) that is somewhat cracked and either hard basalt or compact basalt underneath.

**Keywords :** vertical electrical soundings (VES), resistivity, electrode spacing, Schlumberger configurations, partial curve matching.

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