2D Model of Nickel Laterite Deposits Using the Geoelectrical Resistivity Method

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Abstract. One of the geophysical methods that can be used in nickel laterite exploration is the resistivity geoelectric method. This method can provide in-depth information about subsurface conditions and their distribution. The research location is in Kolo Bawah Village, North Morowali Regency, Central Sulawesi. This study aims to determine the depth of the limonite zone, saprolite zone, and bedrock. The method used uses the resistivity properties of rocks with the Wenner-Schlumberger configuration. Based on data processing results, a model of nickel laterite deposits in the study area was obtained vertically from top to bottom, consisting of limonite and saprolite, which have low resistivity values, and bedrock, which has high resistivity values. In lane 1, the limonite zone has a resistivity value of 1.4 to 17.6 Ωm at a depth of 0 m to 6 m; the saprolite zone has a resistivity value of 17.6 to 97.0 Ωm at a depth of 6 m to 17.3 m; and bedrock has a resistivity of 228 to 534 Ωm with a depth of 20 m below the soil surface. Meanwhile, on track 2, the limonite zone, which has a resistivity value of 0.27 to 7.6 Ωm is found at a depth of 0 m to 4 m; the saprolite zone has a resistivity value of 7.6 to 17.5 Ωm and is located at a depth of 4 to 12 m from the ground surface; and the bedrock zone has a resistivity value of 40.4 to 93.3 Ωm with a depth of 16 m below the ground surface.

Keywords: Laterite Nickel; configuration of Wenner-Schlumberger; Resistivity.