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Estimation of depth and volume of waste materials by using 2D and 3D resistivity method at Kepong, Kuala Lumpur

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Abstract: Environmental hazards, industrial, and municipal wastes assessment were carried out. RES2-D geophysical method was applied, capable of identification and quantification of the industrial wastes, buried hazardous materials, (BHM), and their effects on the subsurface stratum, from the moderately saturated zones to fully saturated zones

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housing the aquifer units underneath the water table. Six RES2-D survey profiles were respectively acquired along E-W and N-S directions. The perpendicular arrangement of the RES2-D survey lines was tenaciously designed to make possible the municipal solid waste (MSW) quantification, with sufficient length of survey lines set at 200 m and electrode spacing of 5 m, to cover as much detail segments of the MSW as possible. The six RES2-D inversion results helped in the subsurface stratum classification into three layers, namely; soft layers, which encompasses the waste materials with varied resistivity values i.e., 0–100 Ω-m, at 10-15m depths. The consolidated layers produced varied resistivity values i.e., 101–400 Ω-m, at 15-20m depths. The bedrock has the highest resistivity values i.e., 401 – 2000 Ω-m, at depths > 20m. The estimated volume of the waste materials was 312,000 m^3, using 3-D Oasis Montaj modeling via rectangular prism model generated from the inverted RES2-D.

Keywords: Environmental hazard assessment, industrial & municipal wastes characterization, depth and volume of the waste materials, Kepong, Kuala Lumpur, Peninsular Malaysia