ABSTRAK

IDENTIFIKASI POTENSI BENCANA TANAH LONGSOR MENGGUNAKAN METODE RESISTIVITAS KONFIGURASI *DIPOLE-DIPOLE* DI DAERAH IMOGIRI, KABUPATEN BANTUL, DAERAH ISTIMEWA YOGYAKARTA

Rachel Nova Wibowo
115.180.010

Penelitian ini dilaksanakan di Desa Wukirsari, Kecamatan Imogiri, Kabupaten Bantul, Daerah Istimewa Yogyakarta. Secara geografis, Desa Wukirsari terletak pada 07°53'30"- 07°56'00" LS dan 110°22'30"- 110°26'30" BT. Daerah imogiri ini merupakan salah satu wilayah di Kabupaten Bantul yang masuk dalam kategori rawan bencana tanah longsor. Sebanyak 100 kasus bencana tanah longsor terjadi dari tahun 2019 - 2021. Maka dibutuhkan identifikasi potensi bencana tanah longsor sebagai upaya mitigasi bencana di Daerah Imogiri.

Identifikasi potensi bencana tanah longsor berbasis Sistem Informasi Geografis (SIG) dibuat dengan *Software ArcMap* dengan cara skoring dan pembobotan antar parameter penyusunnya. selain itu, metode geofisika geolistrik konfigurasi dipole-dipole juga diterapkan sebagai identifikasi keadaan di bawah permukaan bumi. Pengolahan data konfigurasi dipole-dipole diolah menggunakan Software *RES2DINV* sehingga menghasilkan penampang 2D. Kemudian dilanjutkan mengkorelasikan penampang resistivitas 2D dengan *Software Discover Mapinfo* dan pembuatan model 3D menggunakan *Software Oasis Montaj*. Hasil dari pengolahan tersebut dapat dilakukan analisa dan interpretasi mengenai litologi, volume material longsor dan keberadaan bidang gelincir. Peneliti juga menggunakan data tambahan berupa neraca air guna mengetahui kondisi surplus intensitas air hujan di daerah penelitian.

Dari hasil pemetaan kerawanan tanah longsor diperoleh daerah risiko rendah sebesar 28%, sedang 26% dan tinggi 46% yang tersebar di daerah penelitian. Kemudian dari hasil analisa dan interpretasi penampang resistivitas didapatkan bahwa bidang gelincir berada pada litologi lempung yang memiliki nilai resistivitas 14.5 Ωm hingga 22.8 Ωm dikedalaman kurang lebih 25 meter diatas permukaan laut. Berdasarkan hasil korelasi penampang, menunjukkan bahwa material longsor dominan berada dikedalaman 20 meter diatas permukaan laut dengan bentukan material longsor berupa *boulder-boulder*. Dari pemodelan 3D didapatkan untuk volume material longsoran area A (lapisan bidang gelincir) sekitar 18.523 m^3 dan pada area B (lapisan material longsor) sekitar 33.523 m^3. Pada daerah penelitian intensitas curah hujan yang tinggi berada pada bulan Januari, Februari, November dan Desember sesuai dengan kondisi neraca air yaitu nilai CH lebih besar daripada ETP.

Kata Kunci: Geolistrik, Dipole-dipole, Kerawanan Tanah Longsor, Mitigasi.

ABSTRACT

IDENTIFICATION OF POTENTIAL LANDSLIDE DISASTER USING THE DIPOLE-DIPOLE RESISTIVITY CONFIGURATION METHOD IN IMOGIRI, BANTUL, DAERAH ISTIMEWA YOGYAKARTA

Rachel Nova Wibowo
115.180.010

This research is conducted in Wukirsari Village, Imogiri District, Bantul Regency, Special Region of Yogyakarta. Geographically, Wukirsari Village is located at 07°53'30"- 07°56'00" S and 110°22'30"- 110°26'30" E. Imogiri is included to Bantul Regency, one of landslide vulnerability area. There are 100 cases of landslides occurred from 2019 - 2021. So it is necessary to identify potential landslide disasters as a disaster mitigation effort in the Imogiri Region.

Identification of potential landslide disasters based on Geographic Information Systems (GIS) is made using ArcMap Software by scoring and weighting the constituent parameters. In addition, the geoelectric geophysical method of the dipole-dipole configuration is also applied to identify conditions below the earth's surface. Dipole-dipole configuration data processing is processed using RES2DINV Software to produce a 2D cross-section. Then a correlation is made of 2D resistivity cross section by using Discover Mapinfo to get the description of 3D modelling using Oasis Montaj Software. Based on the results, the lithology and volume of the landslide can be interpreted. Beside that, the additional data is used the form of a water balance to determine the condition of surplus rainwater intensity in the study area.

From the results of landslide hazard mapping, it is found that the medium, low and high risk area are 28%, 26% and 46% spread over the research area. Then from the analysis and interpretation of the resistivity cross section, it is found that the slip is on. It has resistivity value of 14.5 m to 22.8 m at a depth 25 from msl. Based on the correlation results, it shows that the dominant landslide material is at a depth of 20 meters above sea level with the formation of landslide material in the form of boulder-boulder. From the 3D modeling obtained, the volume of landslide material in area A (slide plane layer) is around 18,523 m^3 and in area B (slide material layer) it is around 33,523 m^3. In the study area, the highest rainfall is in January, February, November and December according to the air balance conditions, namely the CH value is greater than the ETP.

Keywords: *Geoelectric, Dipoles, Landslide Vulnerability, Mitigation.*