



INTISARI

Gerakan tanah merupakan salah satu tipe bencana geologi di negara tropis seperti Indonesia, terutama pada daerah pegunungan dan perbukitan dengan kondisi geologi dinamis. Gerakan tanah banyak terjadi pada daerah yang mengalami mineralisasi dan alterasi hidrotermal termasuk daerah Pelangan yang berada pada lereng Pegunungan Selatan Pulau Lombok. Penelitian ini bertujuan untuk mengetahui pengaruh tipe dan intensitas alterasi hidrotermal terhadap tingkat kerentanan gerakan tanah, karakteristik gerakan tanah, dan stabilitas lereng di daerah Pelangan.

Metode penelitian terdiri dari 5 (lima) tahap, yaitu pendahuluan, observasi lapangan, analisis laboratorium, pengolahan data, dan analisis hasil pengolahan data. Penelitian lapangan meliputi inventarisasi gerakan tanah, pemetaan geologi dan alterasi hidrotermal, serta pengambilan sampel batuan/tanah residual. Analisis laboratorium meliputi analisis petrografi, XRD, SEM, XRF, serta sifat keteknikan batuan/tanah residual. Metode AHP digunakan untuk membuat peta kerentanan gerakan tanah. Sementara itu, program Slide 6.0 digunakan untuk simulasi stabilitas lereng.

Hasil penelitian menunjukkan bahwa alterasi hidrotermal tipe argilik intermediet intensitas kuat mengontrol tingkat kerentanan gerakan tanah menengah – tinggi serta menyebabkan luncuran bahan rombakan dan rayapan. Tipe propilitik intensitas lemah/sedang mengontrol tingkat kerentanan gerakan tanah rendah – menengah dan menyebabkan jatuh batuan. Analisis stabilitas lereng menunjukkan bahwa penurunan kuat geser tanah/batuak akibat alterasi hidrotermal dengan intensitas kuat memberikan pengaruh signifikan terhadap penurunan faktor keamanan pada lereng Pegunungan Selatan Pulau Lombok. Kondisi ini ditunjukkan oleh tufa andesit segar yang mempunyai kuat geser $311,02 \text{ kN/m}^2$ dan $\text{FK} = 6,16$, teralterasi lemah dengan kuat geser $258,71 \text{ kN/m}^2$ dan $\text{FK} = 4,59$, dan teralterasi kuat dengan kuat geser $11,51 \text{ kN/m}^2$ dan $\text{FK} = 0,65$. Lereng berada dalam kondisi kritis ($\text{FK} = 1$) pada saat berat volume basah mencapai nilai terendah ($\gamma_b = 17,66 \text{ kN/m}^3$) dan kuat geser $25,59 \text{ kN/m}^2$.

Kata Kunci : Gerakan tanah, alterasi hidrotermal, mineral lempung, kerentanan gerakan tanah, stabilitas lereng, Pulau Lombok



ABSTRACT

Landslide is one of the most common types of geological disasters in tropical countries such as Indonesia, especially on the mountainous and hilly terrain with dynamic geological conditions. Most landslides frequently occur in areas intensively suffered by mineralization and hydrothermal alteration including our study area, Pelangan, at Southern Mountain of Lombok Island. This study is aimed to assess the effect of type and intensity of hydrothermal alteration to landslide susceptibility, landslide characteristic, and slope stability in the Pelangan area.

This study is conducted in five stages including desk study, fieldwork, laboratory analysis, data processing, and analysis of result of data processing. Fieldwork includes landslide inventory, geological and hydrothermal alteration mapping, and sampling of rocks/rresidual soils. Laboratory analysis includes petrography, XRD, SEM, XRF, and engineering properties of rocks/residual soils. AHP method was used to develop landslide susceptibility map. Meanwhile, Slide 6.0 was used to simulate slope stability.

The result of this study indicate that the intermediate argillic alteration with strong intensity play important role in controlling the moderate to high landslide susceptibility and inducing the occurrence of debris slide and creep within study area. Whereas, the propylitic alteration with weak/moderate intensity play important role in controlling the low to moderate landslide susceptibility and trigerring the occurrence of rock fall. Slope stability analysis results indicate that the decline in value of shear strength due to strong intensity of hydrothermal alteration with significant impact in reducing the safety factor (SF) of the Southern Mountain of Lombok Island. This is evidenced by the fresh andesitic tuff that have shear strength 311,02kN/m² and SF = 6,16, weakly altered have shear strength 258,71kN/m² and SF = 4,59, and strongly altered have shear strength 11,51 kN/m² and SF = 0,65. The slope are in critical condition while the bulk unit weight reached at the lowest value 17,66 kN/m³ and shear strength reaches 25,59 kN/m².

Keywords : *Landslide, hydrothermal alteration, clay mineral, landslide susceptibility, slope stability, Lombok Island*