



vi

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/residual 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 triggering 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*