

## INTISARI

### **ANALISIS POTENSI LIKUEFAKSI DI KAPANEWON BANTUL, KABUPATEN BANTUL, DAERAH ISTIMEWA YOGYAKARTA MENGUNAKAN DATA MIKROTREMOR DAN KEDALAMAN MUKA AIR TANAH**

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Gempa bumi Yogyakarta tahun 2006 menyebabkan kerusakan parah dan memicu terjadinya likuefaksi. Fenomena likuefaksi berupa rekahan tanah telah ditemukan di Daerah Kapanewon Bantul. Kondisi ini menunjukkan bahwa Kapanewon Bantul memiliki potensi likuefaksi apabila terjadi gempa bumi dengan magnitudo yang lebih tinggi. Penelitian ini dilakukan untuk memetakan potensi likuefaksi berdasarkan skenario terburuk dari Sesar Opak. Analisis potensi likuefaksi dilakukan menggunakan data mikrotremor dan data kedalaman muka air tanah dari 37 titik pengukuran. Metode pendekatan yang digunakan adalah metode *Simple Additive Weight* (SAW) untuk pembobotan dari parameter nilai *Ground Shear Strain* dan kedalaman muka air tanah serta metode perhitungan nilai *Factor of Safety*.

Hasil perhitungan nilai *Ground Shear Strain* menunjukkan bahwa lapisan tanah di Kapanewon Bantul dapat mengalami rekahan dan penurunan tanah jika terjadi gempa bumi. Analisis potensi likuefaksi dari kedua metode saling bersesuaian, dengan potensi likuefaksi tinggi terletak di Desa Sabdodadi, Desa Trirenggo, Desa Palbapang, dan sebelah selatan Desa Bantul. Potensi likuefaksi di Desa Sabdodadi, Desa Trirenggo, dan Desa Palbapang dapat terjadi pada kedalaman 0-8 meter, sedangkan di Desa Bantul, potensi likuefaksi dapat terjadi pada kedalaman 0-2,2 meter.

**Kata kunci:** Likuefaksi, Mikrotremor, *Simple Additive Wight*, *Factor of Safety*

## ABSTRACT

### **ANALYSIS OF LIQUEFACTION POTENTIAL IN BANTUL DISTRICT, BANTUL REGENCY, SPECIAL REGION OF YOGYAKARTA USING MICROTREMOR DATA AND GROUNDWATER LEVEL**

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An earthquake in Yogyakarta 2006 causes severe damage and trigger liquefaction. The liquefaction phenomenon in form of soil fracture had been found in the Bantul District. This indicates that Bantul District have the liquefaction potential when an earthquake occurs with a higher magnitude. This study was conducted to map the liquefaction potential based on the worst-case scenario from Opak Fault. An analysis of the liquefaction potential conducted using microtremor data and groundwater level data from 37 points of measurement. The approach method used is the Simple Additive Weight (SAW) method for weighting the Ground Shear Strain value parameters and groundwater level depth as well as the Factor of Safety value calculation method.

The calculated of the Ground Shear Strain shows that the layer of soil in Bantul District can experience fracture and soil subsidence when the earthquake occurs. An analysis of the liquefaction potential from two methods is corresponded to each other, with the high liquefaction potential levels are located in the Sabdodadi Village, Trirenggo Village, Palbapang Village, and south of Bantul Village. Liquefaction potential in the Sabdodadi Village, Trirenggo Village, and Palbapang Village can happen to 0-8 meters depth, while in the Bantul Village, liquefaction potential can happen to 0-2.2 meters depth.

**Keywords:** Liquefaction, Microtremor, Simple Additive Wight, Factor of Safety