

## ABSTRAK

### IDENTIFIKASI KARAKTERISTIK *SUBSURFACE* BERBASIS INVERSI MIKROTREMOR UNTUK MITIGASI BENCANA KEBUMIHAN DI BANDAR NEGERI SUOH, LAMPUNG BARAT

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Kecamatan Bandar Negeri Suoh, Lampung Barat, merupakan wilayah dengan potensi bahaya kebumihan akibat kondisi geologi dan aktivitas seismik regional. Penelitian ini bertujuan mengidentifikasi karakteristik *subsurface* berbasis inversi mikrotremor menggunakan metode *Horizontal to Vertical Spectral Ratio* (HVSr) pada 16 titik pengukuran untuk mendukung mitigasi bencana kebumihan. Parameter yang dianalisis meliputi frekuensi dominan ( $f_0$ ), faktor amplifikasi, indeks kerentanan seismik ( $K_g$ ), ketebalan sedimen, kecepatan gelombang geser ( $V_s$  dan  $V_{s30}$ ), serta poisson ratio ( $\sigma$ ). Hasil penelitian menunjukkan bahwa seluruh titik memiliki nilai amplifikasi  $< 3$  (kategori rendah), dengan variasi frekuensi dominan Jenis I–IV yang mencerminkan perbedaan karakteristik lapisan tanah. Indeks kerentanan seismik umumnya rendah, namun Titik 7 di Desa Suoh tergolong sedang dan memiliki potensi likuifaksi tertinggi akibat ketebalan sedimen besar, nilai  $V_{s30}$  rendah, poisson ratio tinggi, serta kondisi tanah jenuh air. Hasil penelitian ini dapat menjadi dasar dalam perencanaan mitigasi melalui penguatan fondasi, pengaturan tata ruang, pemantauan muka air tanah, dan penerapan konstruksi tahan gempa.

Kata kunci: mikrotremor, HVSr, karakteristik *subsurface*, kerentanan seismik, likuifaksi, mitigasi bencana.

## **ABSTRACT**

### **IDENTIFICATION OF SUBSURFACE CHARACTERISTICS BASED ON MICROTREMOR INVERSION FOR EARTH DISASTER MITIGATION IN BANDAR NEGERI SUOH, WEST LAMPUNG**

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Bandar Negeri Suoh District, West Lampung, is an area with potential geohazards due to geological conditions and regional seismic activity. This study aims to identify subsurface characteristics based on microtremor inversion using the Horizontal to Vertical Spectral Ratio (HVSr) method at 16 measurement points to support geohazard mitigation. The parameters analyzed include dominant frequency ( $f_0$ ), amplification factor, seismic vulnerability index ( $K_g$ ), sediment thickness, shear wave velocity ( $V_s$  and  $V_{s30}$ ), and Poisson ratio ( $\sigma$ ). The results show that all points have an amplification value  $<3$  (low category), with variations in dominant frequencies of Types I–IV reflecting differences in soil layer characteristics. The seismic vulnerability index is generally low, but Point 7 in Suoh Village is classified as moderate and has the highest liquefaction potential due to large sediment thickness, low  $V_{s30}$  value, high Poisson ratio, and water-saturated soil conditions. The results of this study can be the basis for mitigation planning through foundation strengthening, spatial planning, groundwater level monitoring, and the application of earthquake-resistant construction.

Key words: microtremors, HVSr, subsurface characteristics, seismic vulnerability, liquefaction, disaster mitigation.