

ABSTRAK

PEMODELAN SEBARAN ALIRAN LAHAR GUNUNG MERAPI DAN ANALISIS RISIKO PENGGUNAAN LAHAN DI BANTARAN SUNGAI GENDOL, KALURAHAN GLAGAHARJO DAN SEKITARNYA, KAPANEWON CANGKRINGAN, KABUPATEN SLEMAN, DAERAH ISTIMEWA YOGYAKARTA

Oleh
Meilani Rahma Maulia
111210138
(Program Studi Sarjana Teknik Geologi)

Gunung Merapi merupakan salah satu gunung api paling aktif di Indonesia dengan potensi bahaya sekunder berupa aliran lahar. Sungai Gendol menjadi jalur utama material vulkanik yang berpotensi mengancam permukiman, lahan pertanian, dan infrastruktur di sekitarnya. Penelitian ini bertujuan untuk memodelkan sebaran aliran lahar menggunakan perangkat lunak LAHARZ serta menganalisis risiko penggunaan lahan terdampak di sepanjang Sungai Gendol. Metode yang digunakan ialah pendekatan deskriptif-kuantitatif berbasis *Sistem Informasi Geografis* (SIG) dengan data *Digital Elevation Model* (DEM) resolusi 8,25 meter, data volume lahar dari Balai Teknik Sabo, dan peta penggunaan lahan hasil interpretasi citra *Google Earth* yang diverifikasi melalui survei lapangan. Pengukuran penampang sungai dilakukan secara manual dan melalui citra satelit, lalu diolah menggunakan *Microsoft Excel* untuk menghasilkan profil dasar sungai. Hasil menunjukkan bahwa luas area terdampak meningkat seiring bertambahnya volume lahar, dengan sektor permukiman dan pertanian sebagai wilayah paling rentan. Berbeda dari penelitian terdahulu, studi ini menambahkan analisis geomorfologi penampang sungai dan evaluasi efektivitas sabo dam untuk mendukung upaya mitigasi bahaya lahar di kawasan Gunung Merapi.

Kata kunci: Gunung Merapi, Sungai Gendol, lahar, LAHARZ, sabo dam, mitigasi bencana.

ABSTRACT

MODELING OF MOUNT MERAPI LAHAR FLOW AND LAND USE RISK ANALYSIS IN THE RIVERBANKS OF GENDOL RIVER, GLAGAHARJO VILLAGE AND SURROUNDING AREAS, CANGKRINGAN SUBDISTRICT, SLEMAN REGENCY, SPECIAL REGION OF YOGYAKARTA

By

Meilani Rahma Maulia

111210138

(Geological Engineering Undergraduated Program)

Mount Merapi is one of the most active volcanoes in Indonesia with secondary hazards in the form of lahar flows. The Gendol River serves as the main channel for volcanic material that poses threats to nearby settlements, agricultural lands, and infrastructure. This study aims to model the distribution of lahar flows using the LAHARZ software and to analyze land-use risk along the Gendol River corridor. The research employs a descriptive-quantitative approach based on Geographic Information Systems (GIS) using Digital Elevation Model (DEM) data with a resolution of 8.25 meters, lahar volume data from the Balai Teknik Sabo, and land-use maps interpreted from Google Earth imagery verified through field surveys. Cross-sectional measurements of the river were conducted manually and via satellite imagery, then processed using Microsoft Excel to produce riverbed profiles. The results show that the affected area expands with increasing lahar volume, with residential and agricultural sectors identified as the most vulnerable zones. Unlike previous studies, this research incorporates a geomorphological analysis of river cross-sections and an evaluation of sabo dam effectiveness, providing a more comprehensive understanding to support lahar hazard mitigation efforts in the Mount Merapi region.

Keywords: *Mount Merapi, Gendol River, lahar, LAHARZ, sabo dam, disaster mitigation.*