

GEOLOGI DAN POTENSI SUMBER DAYA PASIR DAN BATU,
DAERAH CIKALAHANG, KECAMATAN DUKUPUNTANG,
KABUPATEN CIREBON, JAWA BARAT

SARI

Pasir dan batu merupakan sumber daya mineral penting yang berperan sebagai bahan baku utama dalam pembangunan infrastruktur. Seiring meningkatnya kebutuhan pembangunan di Indonesia, permintaan terhadap pasir dan batu juga mengalami peningkatan. Kegiatan penambangan menjadi salah satu upaya untuk memenuhi kebutuhan tersebut. Salah satu lokasi penambangan pasir dan batu berada di wilayah Cikalahang, Kecamatan Dukupuntang, Kabupaten Cirebon, Jawa Barat. Analisis Potensi Sumber daya pasir dan batu dilakukan guna mengetahui potensi sumber daya pada wilayah daerah penelitian mulai dari segi estimasi, kondisi sumber daya, hingga potensi ekonomi sumber daya. Pada perhitungan estimasi sumber daya pasir dan batu, perhitungan dilakukan menggunakan metode *cross section* dan metode *contour* dengan bantuan *software minescape 5.7* dan *arcgis 10.8*. Daerah penelitian secara geologi terdiri atas aspek geomorfologi, stratigrafi, struktur geologi, dan sejarah geologi. Geomorfologi wilayah ini mencakup lima (5) satuan bentuk lahan, yaitu Satuan Perbukitan Intrusi Cikalahang, Satuan Punggungan Aliran Lahar Ciremai, Satuan Kipas Aliran Lava Ciremai, Satuan Kerucut Gunungapi Ciremai, dan Satuan Dataran Aliran Piroklastik Ciremai. Stratigrafi disusun oleh Satuan Breksi Laharik dan Satuan Lava Andesit yang berumur Pleistosen. Struktur geologi mayor tidak ditemukan, namun terdapat pola kelurusan bukit dan lembah berarah barat daya–timur laut. Sejarah geologi dimulai dari aktivitas intrusi magma pada Miosen Akhir, diikuti pengendapan Formasi Kaliwangu, dan diakhiri oleh pembentukan produk vulkanik Gunungapi Ciremai pada kala Kuartar. Material pasir dan batu di lokasi penelitian merupakan hasil erupsi Gunungapi Ciremai. Pasir berasal dari matriks breksi laharik berupa vitric tuff, dengan ukuran butir sedang hingga kasar, sedangkan batu berupa fragmen andesit dari breksi laharik. Berdasarkan perhitungan potensi sumber daya menggunakan metode penampang melintang (*cross section*), total volume pasir dan batu setelah dikurangi lapisan penutup (*overburden*) adalah $1.304.751,60 \text{ m}^3$, dengan rasio pasir 73% dan batu 27%. Metode kontur menghasilkan estimasi volume sebesar $1.320.405,71 \text{ m}^3$. Selisih kedua metode sebesar $15.654,11 \text{ m}^3$ dengan tingkat kesalahan relatif 1,18%. Hasil ini diharapkan menjadi dasar perencanaan pengelolaan sumber daya pasir dan batu secara berkelanjutan di wilayah Cikalahang, Dukupuntang, Kabupaten Cirebon.

Kata Kunci : Pasir, Batu, Potensi Sumber Daya, Cross Section, Contour

*GEOLOGY AND RESOURCE POTENTIAL OF SAND AND GRAVEL
IN THE CIKALAHANG AREA , DUKUPUNTANG DISTRICT,
CIREBON REGENCY, WEST JAVA*

ABSTRACT

Sand and gravel are important mineral resources that serve as primary raw materials for infrastructure development. As infrastructure demand in Indonesia continues to increase, the need for sand and gravel has also grown. Mining activities are one of the efforts undertaken to meet this demand. One of the sand and gravel mining locations is in Cikalahang, Dukupuntang District, Cirebon Regency, West Java. An analysis of the sand and gravel resource potential was conducted to determine the estimated quantity, resource conditions, and economic potential of the materials in the study area. Resource estimation was carried out using the cross section and contour methods with the aid of Minescape 5.7 and ArcGIS 10.8 software. Geologically, the study area includes aspects of geomorphology, stratigraphy, geological structure, and geological history. The geomorphological units identified in the area consist of Intrusive Hills Unit Cikalahang, Lahar Flow Ridge Unit Ciremai, Lava Flow Fan Unit Ciremai, Volcanic Cone Unit Ciremai, and Pyroclastic Flow Plain Unit Ciremai. Stratigraphy is composed of Laharik Breccia Unit and Andesite Lava Unit, both dated to the Pleistocene epoch. No major geological structures were found, but the area exhibits a predominant southwest–northeast lineation pattern of hills and valleys. The geological history began with magma intrusion during the Late Miocene, followed by the deposition of the Kaliwangu Formation, and culminated in the formation of volcanic products from Mount Ciremai during the Quaternary period. The sand and gravel materials in the study area are products of Mount Ciremai's volcanic activity. The sand originates from the matrix of laharic breccia in the form of vitric tuff, with medium to coarse grain sizes, while the gravel consists of andesitic fragments derived from breccia deposits. Based on resource estimation using the cross section method, the total volume of sand and gravel after deducting the overburden is 1.304.751,60 m³ with a composition ratio of 73% sand and 27% gravel. The contour method yields an estimated volume of 1.320.405,71 m³. The difference between the two methods is 15.654,11 m³ with a relative error rate of 1.18%. These findings are expected to serve as a basis for sustainable planning and management of sand and gravel resources in the Cikalahang area, Dukupuntang District, Cirebon Regency.

Keywords : Sand, Gravel, Resource Potential, Cross Section, Contour