

**GEOLOGI DAN PERHITUNGAN ESTIMASI VOLUME
AIR LIMPASAN DAN NON LIMPASAN PADA PIT BLOK 14 DAN 22,
DESA BENANGIN, KECAMATAN TEWEH TIMUR,
KABUPATEN BARITO UTARA
PROVINSI KALIMANTAN TENGAH**

SARI

Daerah Penelitian secara administratif berada di wilayah Izin Usaha Pertambangan (IUP) PT Bharinto Ekatama Pit Blok 14 dan 22 Desa Benangin, Kecamatan Teweuh Timur, Kabupaten Barito Utara, Provinsi Kalimantan. Berdasarkan evaluasi dewatering bulan Desember 2023 terdapat penambahan biaya pemompaan sehingga perlu dilakukan investigasi faktor penambahan volume air sump pada Pit Blok 14 dan 22. Metode pengambilan data yang digunakan dalam penelitian ini adalah pemetaan secara langsung untuk mendapatkan data geologi dan hidrogeologi. Tujuan penelitian ini untuk menganalisis kondisi geologi dan mengestimasi volume air limpasan hujan dan non limpasan. Volume limpasan hujan didapatkan dari analisis curah hujan, sedangkan volume air non limpasan dilakukan pengukuran langsung di lapangan berupa air tanah terpotong, air bocoran sump dan air limpasan sungai. Analisis Geomorfologi terdiri dari bentuk asal denudasional (Perbukitan bergelombang lemah (D1), bentuk asal fluvial berupa tubuh Sungai (F1) dan dataran alluvial (F2), dan bentuk asal antropogenik berupa lahan bukaan tambang (A1), timbunan disposasi (A2) dan danau tambang (A3) dengan pola pengaliran sub-dendritik. Analisis stratigrafi terdiri dari Satuan batulempung Pulaubalang dan Satuan batupasir Pulaubalang terendapkan pada lingkungan laut dangkal (*upper shoreface, middle shoreface, dan lower shoreface*) yang berumur Miosen Tengah serta timbunan disposasi. Analisis petrografi mendapatkan litologi *lithic arenit, quartz wacke, dan mudrock*, sedangkan analisis mikrofosil tidak dijumpai adanya fosil foraminifera plankton (*barren*). Struktur sedimen terdapat massif, perlapisan, laminasi, laminasi bergelombang, dan menyerpih, sedangkan struktur geologi berkembang secara minor berupa kekar gerus dengan arah tegasan barat laut – Tenggara. Berdasarkan pengambilan data slug test didapatkan nilai *Konduktivitas hidraulik (K)* berkisar $2,09-5,06 \times 10^{-6}$ m/s, *Transmisivitas (T)* berkisar $3,43-3,56 \times 10^{-5}$ m²/s, serta *Storativitas (S)* berkisar $1,824-5,01 \times 10^{-5}$. Berdasarkan pengukuran Metode *volumetrik* didapatkan total volume air non limpasan pada Pit 3000 blok 22 sebesar 35.412m³/bulan dan pada Pit 6000 blok 14 sebesar 20.995m³/bulan. Berdasarkan Analisis Data Curah Hujan 10 tahunan, didapatkan estimasi volume air limpasan hujan pada Januari Pit 3000 blok 22 sebesar 429.032 m³ dan Pit 6000 blok 14 sebesar 677.607 m³. Sedangkan Februari masing-masing sebesar 497.002 m³ dan 784.958 m³. Serta pada Maret sebesar 583.603 m³ dan 921.736 m³.

Kata Kunci : Data Curah Hujan, Metode Volumetrik , *Slug test* , Volume

**GEOLOGY AND ESTIMATION OF RUNOFF AND NON-RUNOFF
WATER VOLUME IN PIT BLOCKS 14 AND 22,
BENANGIN VILLAGE, EAST TEWEH DISTRICT,
NORTH BARITO REGENCY,
CENTRAL KALIMANTAN PROVINCE**

ABSTRACT

The research area is administratively located within the Mining Business Permit (IUP) area of PT Bharinto Ekatama Pit Block 14 and 22, in Benangin Village, East Teweh District, North Barito Regency, Central Kalimantan Province. Based on the dewatering evaluation in December 2023, there was an increase in pumping costs, necessitating an investigation into the factors contributing to the increased sump water volume in Pit Blocks 14 and 22. The data collection method used in this study involved direct mapping to obtain geological and hydrogeological data. The objective of this research is to analyze the geological conditions and estimate the volume of runoff and non-runoff water. The volume of runoff water was obtained through rainfall analysis, while the volume of non-runoff water was directly measured in the field, including groundwater, sump leakage water, and river runoff. Geomorphological analysis identified denudational landforms (weakly undulating hills, D1), fluvial landforms such as river bodies (F1) and alluvial plains (F2), and anthropogenic landforms such as mining open pits (A1), disposal dumps (A2), and mine lakes (A3) with a sub-dendritic drainage pattern. Stratigraphic analysis identified the Pulaubalang Claystone Unit and the Pulaubalang Sandstone Unit, deposited in a shallow marine environment (upper shoreface, middle shoreface and lower shoreface) during the Middle Miocene, along with disposal dumps. Petrographic analysis revealed lithologies of lithic arenite, quartz wacke, and mudrock, while microfossil analysis found no planktonic foraminifera fossils (barren). Sedimentary structures identified include massive bedding, layering, lamination, wavy lamination, and ripple marks, while geological structures are minor and include shear joints oriented northwest-southeast. Based on slug test data, the hydraulic conductivity (K) was found to range between $2,09-5,06 \times 10^{-6}$ m/s, transmissivity (T) between $3,43-3,56 \times 10^{-5}$ m²/s, and storativity (S) between $1,824-5,01 \times 10^{-5}$. Using the volumetric method, the total volume of non-runoff water in Pit 3000 Block 22 was calculated to be 35.412 m³/month and in Pit 6000 Block 14 to be 20.995 m³/month. Based on the 10-year Rainfall Data Analysis, the estimated volume of runoff water in January in Pit 3000 Block 22 was 429.032 m³ and in Pit 6000 Block 14 was 677.607 m³. For February, the figures were 497.002 m³ and 784.958 m³, respectively, and in March, 583.603 m³ and 921.736 m³, respectively.

Keywords: *Rainfall Data, Volumetric Method, Slug test, Volume*