

ABSTRAK

KAJIAN TEKNIS SISTEM PENYALIRAN TAMBANG PIT X BLOK PEBOA PT BUKIT MAKMUR ISTINDO NIKELTAMA, PROVINSI SULAWESI TENGAH

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PT Bukit Makmur Istindo Nikeltama merupakan perusahaan pertambangan nikel yang berlokasi di Desa Peboa, Kecamatan Petasia Timur, Kabupaten Morowali Utara, Provinsi Sulawesi Tengah. Dalam kegiatan operasionalnya, perusahaan menerapkan sistem tambang terbuka (*open pit mining*) yang sangat dipengaruhi oleh kondisi iklim dan curah hujan. Curah hujan yang tinggi menyebabkan air limpasan masuk ke area pit sehingga menimbulkan genangan yang dapat mengganggu kegiatan penambangan dan menurunkan produktivitas kerja. Oleh karena itu, diperlukan sistem penyaliran tambang yang efektif untuk mengendalikan air tambang yang berasal dari air hujan, air limpasan, dan air tanah.

Penelitian ini bertujuan untuk menghasilkan kajian sistem penyaliran tambang yang sesuai dengan kondisi operasional perusahaan sehingga kegiatan penambangan dapat berjalan dengan lancar dan target produksi dapat tercapai. Berdasarkan hasil analisis data curah hujan tahun 2014–2023 diperoleh curah hujan harian maksimum sebesar 95,00 mm dengan periode ulang hujan 5 tahun dan curah hujan rencana sebesar 60,32 mm/hari. Intensitas curah hujan sebesar 13,17 mm/jam dengan rata-rata durasi hujan 2 jam/hari. Debit air pada DTH I sebesar 0,74 m³/detik.

Hasil penelitian menunjukkan bahwa sistem penyaliran tambang perlu dievaluasi untuk memastikan seluruh debit limpasan dapat ditampung dan dialirkan secara optimal. Evaluasi terhadap dimensi saluran, kapasitas ceruk, dan kolam pengendapan menghasilkan rekomendasi teknis guna meningkatkan efektivitas pengelolaan air tambang sehingga kegiatan penambangan dapat berlangsung lebih aman, lancar, dan produktif..

Kata kunci: air lmpasan, curah hujan, debit air, kolam pengendapan lumpur, sistem penyaliran tambang, tambang terbuka (*open pit mining*).

ABSTRACT

TECHNICAL EVALUATION OF THE MINE DRAINAGE SYSTEM AT PIT X, PEBOA BLOCK, PT BUKIT MAKMUR ISTINDO NIKELTAMA, CENTRAL SULAWESI PROVINCE

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PT Bukit Makmur Istindo Nikeltama is a nickel mining company located in Peboa Village, East Petasia District, North Morowali Regency, Central Sulawesi Province. In its mining operations, the company applies an open-pit mining system, which is highly influenced by climatic conditions and rainfall. High rainfall causes surface runoff to enter the pit area, resulting in water accumulation that can disrupt mining activities and reduce work productivity. Therefore, an effective mine drainage system is required to control mine water originating from rainfall, surface runoff, and groundwater.

This study aims to develop a mine drainage system assessment that is suitable for the company's operational conditions, thereby ensuring smooth mining operations and the achievement of production targets. Based on the analysis of rainfall data from 2014–2023, the maximum daily rainfall was found to be 95.00 mm, with a 5-year return period and a design rainfall of 60.32 mm/day. The rainfall intensity was calculated at 13.17 mm/hour, with an average rainfall duration of 2 hours/day. The runoff discharge in Catchment Area I was determined to be 0.74 m³/s.

The results indicate that the existing mine drainage system requires evaluation to ensure that all runoff discharge can be adequately accommodated and conveyed. The evaluation of channel dimensions, sump capacity, and settling pond capacity resulted in technical recommendations aimed at improving the effectiveness of mine water management, thereby enabling mining operations to be conducted more safely, efficiently, and productively.

Keywords: runoff, rainfall, water discharge, settling pond, mine drainage system open pit mining