

## ABSTRAK

Daerah penelitian secara administratif berada di wilayah Izin Usaha Pertambangan (IUP) PT Bukit Asam Tbk Pit "X" Banko Barat Desa Tegal Rejo, Kecamatan Lawang Kidul, Kabupaten Muara Enim, Provinsi Sumatera Selatan yang terletak pada zona *Universal Transverse Mercator* (UTM) 48 S koordinat 369250 – 372250 mT dan 9585250 – 9587250 mU. Analisis geomorfologi terdiri dari bentukasal denudasional (dataran denudasional) dan bentukasal antropogenik (bukaan tambang, timbunan *disposal*, timbunan batubara, kolam air bekas tambang, dan jalan angkut tambang). Analisis stratigrafi terdiri dari satuan batulempung Muara Enim (batulempung, batulempung tufan, dan batulanau) dan satuan batupasir Muara Enim (batupasir, batupasir tufan, batulempung, batulanau, dan batubara) terendapkan pada lingkungan *transitional lower delta plain* (*swamp*, *crevasse splay*, dan *interdistributary bay*) berumur Miosen Akhir serta timbunan *disposal* dan timbunan batubara. Analisis petrografi mendapatkan litologi *siltstone*, *quartz wacke*, *mudrock*, dan *lithic wacke*, sedangkan analisis mikrofossil tidak dijumpai adanya fosil foraminifera plankton (*barren*). Struktur sedimen terdapat masif, perlapisan, dan flaser, sedangkan struktur geologi berkembang secara minor berupa kekar gerus dengan arah tegasan utama relatif barat-barat daya – timur-timur laut. Potensi geologi positif terdapat bahan galian batubara dan pembangkit listrik tenaga uap, sedangkan potensi geologi negatif terdapat air asam tambang, retakan, kelongsoran, dan polusi. Analisis kestabilan lereng *disposal* sayatan A – A', B – B', dan C – C'; rencana kerja berturut-turut mendapatkan faktor keamanan (1,592; 1,594; dan 1,588), probabilitas kelongsoran (2,018%; 1,0524%; dan 1,2077%), dan estimasi volume (10.476.583,0138 m<sup>3</sup>; 1.542.205,4146 m<sup>3</sup>; dan 282.233,8728 m<sup>3</sup>) dengan rekomendasi yang tepat dan dapat dilaksanakan berupa optimasi geometri berturut-turut mendapatkan faktor keamanan (1,203; 1,196; dan 1,238), probabilitas kelongsoran (3,9051%; 4,0748%; dan 3,7016%), dan estimasi volume (13.167.079,5176 m<sup>3</sup>; 2.472.511,9298 m<sup>3</sup>; dan 843.203,5343 m<sup>3</sup>).

**Kata Kunci:** Analisis Kestabilan Lereng, *Disposal*, Faktor Keamanan, Geologi

## **ABSTRACT**

*The research area is administratively located in the Mining Business Permit (PBM) area of PT Bukit Asam Tbk Pit "X" West Banko Tegal Rejo Village, Lawang Kidul District, Muara Enim Regency, South Sumatra Province which is located in the Universal Transverse Mercator (UTM) zone 48 S coordinates 369250 - 372250 mE and 9585250 – 9587250 mN. Geomorphological analysis consists of denudational landform (denudational plain) and anthropogenic landforms (mine opening, disposal dump, coal dump, sump, and mine haul road). Stratigraphic analysis consists of Muara Enim mudstone unit (mudstone, tuffaceous mudstone, and siltstone) and Muara Enim sandstone unit (sandstone, tuffaceous sandstone, mudstone, siltstone, and coal) deposited in a transitional lower delta plain environment (swamp, crevasse splay, and interdistributary bay) of Late Miocene age as well as disposal dump and coal dump. Petrographic analysis found siltstone, quartz wacke, mudrock, and lithic wacke, while microfossil analysis found no plankton foraminifera fossil (barren). Sedimentary structures are massive, layering, and flaser, while geological structures develop minorly in the form of grinding bridles with the main strike direction relatively west-southwest – east-northeast. Positive geological potential consists of coal excavation materials and steam power plant, while the negative geological potential consists of acid mine drainage, crack, landslide, and pollution. The slope stability analysis of disposal incisions A - A', B - B', and C - C'; the work plan successively obtained factor of safety (1.592; 1.594; and 1.588), probability of failure (2.018%; 1.0524%; and 1.2077%), and volume estimates (10,476,583.0138 m<sup>3</sup>; 1,542,205.4146 m<sup>3</sup>; and 282. 233.8728 m<sup>3</sup>) with appropriate and implementable recommendations in the form of geometry optimization successively obtaining factor of safety (1.203; 1.196; and 1.238), probability of failure (3.9051%; 4.0748%; and 3.7016%), and volume estimates (13,167,079.5176 m<sup>3</sup>; 2,472,511.9298 m<sup>3</sup>; and 843,203.5343 m<sup>3</sup>).*

**Keywords:** *Disposal, Geology, Safety Factor, Slope Stability Analysis*