

ABSTRACT

Pit Tutupan is a coal mining project owned by PT. Adrao Indonesia as the holder of Perjanjian Karya Pengusahaan Pertambangan Batubara (PKP2B) which is located in the district of Tanjung, South Kalimantan Province. PT. Pamapersada is a trustworthy contractor to undertake mining activities in the pit Tutupan by using open-pit mining system. In open-pit mining system, high rainfall will potentially disrupt mining operations. To overcome these problems, the system required good mine drainage system.

The planning of mine drainage system at PT. Pamapersada begins with rainfall analysis, the calculation of the rainfall discharge plan, the design of open channel, sump, and pumping systems.

Based on analysis of rainfall data for the year 2001 - 2015, obtained a daily plan rainfall of 110 mm, 24,06 mm/h rainfall intensity with 3-year return period rainfall and hydrology risk by 86.83%. The location of Catchment area is divided into three catchment, namely DTH I (sump elevation -174) = 4.4 km², DTH II (sump elevation -185) = 6.2 km², and DTH III (sump 0) = 0.85 km². Rain water discharge at DTH I is (sump elevation -174) = 26,48 m³ / sec, DTH II (sump -185) = 37,32 m³ / sec, DTH III (sump elevation 0) = 5,11 m³ / sec.

The design of the pit Tutupan open channel is trapezoidal with the dimensions varies by segments. The dimensions are the bottom width between 0.40 to 2 meters, the top width between 0.80 to 4.30 meters, and the depth between 0.40 to 2 meters. Requirement number of primary pump are 5 units with each pump has 600 m³/h water discharge at sump elevation -174, 7 units pumps at sump -185 with water discharge of each pump are 880 m³ / h, and 10 units pumps at sump West elevation 0 with water discharge of each pump are 600 m³ / sec. The sump requirement volume is 412.890 m³ at sump -174 wells, 749.909 m³ at sump elevation -185, and 630.794 m³ at sump West elevation 0. Pumps used in the design are MULTIFLO MFVC Type-420E.