

ABSTRACT

PT. Multi Jaya Energy is a coal mining company located in Ardi Mulyo Village, Northern District of Tanjung Palas, Bulungan, East Borneo. The company is doing exploration. Before doing the next stage is necessary to study hydrogeology, include discharge water runoff, rain properties, aquifer testing, aquifer characteristics, soil water potential and water quality testing.

Rainfall data obtained from the Meteorological Station Class III Juata Tarakan for 11 years range from 2001 to 2011. Annual rainfall ranges from 3265 - 4529 mm and the rainy days 226 - 297 days, with average rainfall 3812 mm. From this data, the area is an area with high rainfall. Return period is determined at the 3rd annual rainfall is 142.75 mm and 49.49 mm per hours for rainfall intensity.

Area of research has elevation from 20 m to 120 m there are two Catchments Rain (DTH). Extensive DTH I is 1,15 km² with 6,32 m³/second water run off discharge, while the area of DTH II is 0,25 m² with 1,37 m³/second water run off discharge.

To obtain aquifer parameters in the area of research needs to do slug test on 4 drill holes C02-F GDM, GDM G01-F, G02-F GDM, and GDM GO3.RF. The results are permeability values (K) ranged from 1.334m x 10⁻⁷ m/sec to 9.106 x 10⁻⁶ m/sec, value transmissivity (T) ranged from 1.023 x 10⁻⁶ m²/second to 8.494 x 10⁻⁵ m²/second, while the coefficient of storage (S) ranged from 1.59 x 10⁻⁵ - 4.92 x 10⁻⁶.

Water testing is done to determine the water quality in the study area. Based on slug test for 9 samples in Hydrology Laboratory of the Faculty of Geography, Gadjah Mada University, Yogyakarta showed relatively good water conditions, although none meet the standards of quality in class I (qualified raw water for drinking water and can be used directly without going through the treatment process). Based results of the analysis showed that the overall water quality in the study area is quite good. It can be seen from the pH values ranged from 6.72 to 6.94. Levels of Fe which is an important element of the whole organism samples were below the limit threshold, which has content iron <0.0011 mg/L. The dissolved residue (TSS) value 1,000 mg/L, and manganese (total Mn) for the entire sample are value 0.0242 mg/L to 0.7771 mg/L.

Keyword: hydrology, slug test, water