

ABSTRACT

CV. Tirta Baru Laksana is one of the Andesite mining companies in the Purworejo Regency, Which operating in Hargorojo Village, Bagelen District. Mining system implemented by CV. Tirta Baru Laksana is an open pit mine with the called Quarry.

The mining system using the Quarry method applied will greatly affect the weather conditions directly, especially in the rainy season. During the rainy season, rainwater and runoff will directly enter the mining front. This situation can cause damage to the mining road and waterlogging in the mining area if not handled properly.

Based on the analysis of rainfall data from 2008 – 2017, the value of the planned rainfall of 111,916 mm/day, with rainfall intensity of 38,79 mm/hour with during 3 year rain return period and a hidrology risk of 86,83 %. The area of the catchment area in the study area is devided info five (5) catchment areas, as follows: Catchment Area 1 = 0,0695 km², Catchment Area 2 = 0,0087 km², Catchment Area 3 = 0,0047 km², Catchment Area 4 = 0,0035 km², and Catchment Area 5 = 0,0067 km². Rainwater discharge $Q_{\text{Catchment Area 1}} = 0,67 \text{ m}^3/\text{sec}$. $Q_{\text{Catchment Area 2}} = 0,08 \text{ m}^3/\text{sec}$. Runoff water run-off for Catchment Area $Q_{\text{Catchment Area 3}} = 0,04 \text{ m}^3/\text{sec}$, $Q_{\text{Catchment Area 4}} = 0,03 \text{ m}^3/\text{sec}$, and $Q_{\text{Catchment Area 5}} = 0,06 \text{ m}^3/\text{sec}$.

The construction of open canals aims to drain rainwater into the mining area and drain runoff so as not to flood the mine road. There are two (2) open channels with each dimension:

- 1. Open Channel I : $B = 0,83 \text{ m}$; $b = 1,66 \text{ m}$; $h = 0,72 \text{ m}$; $a = 0,83 \text{ m}$; $d = 0,80 \text{ m}$; $L = 885 \text{ m}$; $\alpha = 60^\circ$.*
- 2. Open Channel II : $B = 0,33 \text{ m}$; $b = 0,66 \text{ m}$; $h = 0,17 \text{ m}$; $a = 0,33 \text{ m}$; $d = 0,29 \text{ m}$; $L = 399 \text{ m}$; $\alpha = 60^\circ$.*

Culverts are made to drain water from the mine which cut the haul roads. Vertical section of the culvert made from concrete with diameter, $G1 = 0,60 \text{ m}$.

Before the run off water from the open channels streamed into the river, it has to be cleared in the settling pond. Settling pond designs consist of three (3) compartments with area of 320 m² and 1.300 m³ of volume. The maintenance the sediment from settling pond is required every 35 day.