ABSTRACT

PT. Panca Logam Nusantara is a mining company that manages natural wealth in the form of gold (Au) sediment deposits. The mining location is in Wumbubangka Village, North Rarowatu District, Bombana Regency, Southeast Sulawesi. The mining system carried out is a surface mining system with alluvial mining method (spray method). The method of spray mining is that water is sprayed using a high-pressure monitor towards the ore body, then the water and sediment mix into the sludge which is sucked by the slurry pump into the sluice box separator, with the difference in density between the ore and impurities it will separate and tailling in the mud enter the raw pool and get sucked back by the water pump to the monitor for the mining process.

Some problems faced by PT. Panca Logam Nusantara, one of them is there wasn't a good drainage system yet that can circulate water which made a large number of puddles of ex-mining that are wasted around the mining area without further prevention, besides if there is a rainy season with high rainfall falling can pool in the mining area and flow to the area around the mine that is low. Based on the analysis of rain fall data for the year 2006-2015, obtained plan rainfall of 79.02 mm / day, rainfall intensity of 27.39 mm /h with a 2 year return period and hydrological risk of 87.50%. The area of rain catchment area at the study site DTH I = 0.22 km and DTH II = 0.58 km Water discharge runoff in each rain catchment area as follows: DTH I = 0.65 m3 /second, DTH II = 0.79 m3 / second. The water debit that enters the mining area is water that comes from DTH I = 0.65 m3 / second and the water coming out of the monitor is 0.38 m3/second.

The channel that will be planned is mine drainage. Mine drainage channels around the mine opening to prevent the entry of water from outside the mine site, namely:

a. Open Channels I: a = 0,94 m; B = 0,83 m, b = 1,66 m, h = 0,72m, d = 0,82 m.
b. Open Channels II: a = 1.24 m; B = 1,03 m; b = 2,07 m; h = 0,90 m; d = 1.08 m.
c. Open Channels III: a = 1.24 m; B = 1,03 m; b = 2,07 m; h = 0,90 m; d =1.08 m.

Design-shaped settling ponds are rectangular and winding. The dimensions of the settling pond are the number of compartments 3, depth (H) = 3 m, width (b) = 19 m, length of each compartment (l) = 13 m, width of insulation = 3 m, insulating length = 26 m, depth of insulation = 3 m, volume of 4.296 m3 with a volume of solids settling as much as 378 m3 / day, the dredging time of the settling pond is every 12 days.