

SUMMARY

This mine drainage system research carries out in the open-pit mine using the mine dewatering methods. The source of the mine water comes from the surface runoff water that enters the mine area. Some of the surface runoff water will flow directly into the river and some will enter the opening hole. The water which enters the mine opening requires pumping stages that are useful to prevent the flooding potential of the sump. The rainfall data used in this research was taken for 12 years, from 2006 – 2017 with 5 years PUH with average rainfall of 93,10 mm, planned daily rainfall of 119,56 mm and rainfall intensity of 41.36 mm /hour. The use of the rainfall calculations has been using Gumbel distribution with just one alternative. But in this research, several alternatives will be used to determine the usage according to the condition of the field. The location of the research was divided into three rain catchments and three open channels. The three open channels in the research location have different dimensions and runoff water discharge. From the open channel, the water is also flowed through the culvert which in actual conditions the amount needs to be added in order to avoid the potential of water overflow in the open channel. After going through the open channel and the culvert, the water is then flowed to the settling pond for the management stage before the water is being flowed back into the river. Some of the water that flows into the settling pond is the water that comes from the pumping on the sump. The capacity needed in the sump is 119,642.69 m³, using 2 pumps, namely the type DND-200 and Multiflo 390 using a pipe with a diameter of 10 inches and a length of 700 m.