World Academy of Science, Engineering and Technology
International Journal of Agricultural and Biosystems Engineering
Vol:11, No:09, 2017

Analyzing the Water Quality of Settling Pond after Revegetation at Ex-Mining Area

Authors : Iis Diatin, Yani Hadiroseyani, Muhammad Mujahid, Ahmad Teduh, Juang R. Matangaran

Abstract : One of silica quarry managed by a mining company is located at Sukabumi District of West Java Province Indonesia with an area of approximately 70 hectares. Since 2013 this company stopped the mining activities. The company tries to restore the ecosystem post-mining with rehabilitation activities such as reclamation and revegetation of their ex-mining area. After three years planting the area the trees grown well. Not only planting some tree species but also some cover crop has covered the soil surface. There are two settling ponds located in the middle of the ex-mining area. Those settling pond were built in order to prevent the effect of acid mine drainage. Acid mine drainage (AMD) or the acidic water is created when sulphide minerals are exposed to air and water and through a natural chemical reaction produce sulphuric acid. AMD is the main pollutant at the open pit mining. The objective of the research was to analyze the effect of revegetation on water quality change at the settling pond. The physical and chemical of water quality parameter were measured and analysed at site and at the laboratory. Physical parameter such as temperature, turbidity and total organic matter were analyse. Also heavy metal and some other chemical parameter such as dissolved oxygen, alkalinity, pH, total ammonia nitrogen, nitrate and nitrite were analysed. The result showed that the acidity of first settling pond was higher than that of the second settling pond. Both settling pond water's contained heavy metal. The turbidity and total organic matter were the parameter of water quality which become better after revegetation.

Keywords : acid mine drainage, ex-mining area, revegetation, settling pond, water quality
Conference Title : ICCSAES 2017 : International Conference on Crop, Soil, Agricultural and Environmental Sciences
Conference Location : Singapore, Singapore
Conference Dates : September 11-12, 2017