STUDY ON GRAVITY AERATOR VARIATION TO INCREASE THE DISSOLVED OXYGEN CONTENT IN WATER OF BOEZEM KALIDAMI SURABAYA

Name : Muhammad Gama Prastowo
ID No. : 3306 100 012
Department : Environmental Engineering, FTSP-ITS
Supervisor : Ir. M. Razif, MM.

Abstract

Boezem Kalidami is one of Boezems in Surabaya that has been contaminated because of domestic waste from the city. One of treatment processes to increase the water quality of Boezem Kalidami is an aeration process. This research was conducted in the Boezem Kalidami using a waterfall gravity aerator. Samplings as well as the analysis of the samples were done in the site, as well. A DO meter was used for the measurement and the winkler method was utilized in the analysis.

The variables used in this research were height of waterfall, width of overflow water, and water discharge. From these variations, the increasing of DO content and Oxygen Transfer Coefficient ($K_{La}$) from each variation can be investigated.

The best variation was obtained by a calculation method using the $1^{st}$ order equation by entering the $K_{La}$ value to find the DO content in a certain time. From the calculation results, the best variation for the first experiment that provided the DO value of 4.01 mg/L was obtained at the conditions of: 30 cm width of water overflow, 3 x 25 cm height of water fall, and 75 ml/s water discharge, while at the second experiment with the total height of water fall was equal to 5 x 25 cm provided the value of DO of 4.13 mg/L.

Keyword: Boezem, Kalidami, Oxygen Transfer, Aeration, DO, $K_{La}$