World Academy of Science, Engineering and Technology
International Journal of Civil and Environmental Engineering
Vol:9, No:03, 2015

Quantification of Leachate Potential of the Quezon City Controlled Dumping Facility Using Help Model

Authors : Paul Kenneth D. Luzon, Maria Antonia N. Tanchuling

Abstract : The Quezon City Controlled Dumping facility also known as Payatas produces leachate which can contaminate soil and water environment in the area. The goal of this study is to quantify the leachate produced by the QCCDF using the Hydrologic Evaluation of Landfill Performance (HELP) model. Results could be used as input for groundwater contaminant transport studies. The HELP model is based on a simple water budget and is an essential “model requirement” used by the US Environmental Protection Agency (EPA). Annual waste profile of the QCCDF was calculated. Based on topographical maps and estimation of settlement due to overburden pressure and degradation, a total of 10M m^3 of waste is contained in the landfill. The input necessary for the HELP model are weather data, soil properties, and landfill design. Results showed that from 1988 to 2011, an average of 50% of the total precipitation percolates through the bottom layer. Validation of the results is still needed due to the assumptions made in the study. The decrease in porosity of the top soil cover showed the best mitigation for minimizing percolation rate. This study concludes that there is a need for better leachate management system in the QCCDF.

Keywords : help model, landfill, payatas trash slide, quezon city controlled dumping facility
Conference Title : ICCEE 2015 : International Conference on Civil and Environmental Engineering
Conference Location : Miami, United States
Conference Dates : March 09-10, 2015