

Creation of a Ground Water Quality Index for an Open Municipal Landfill Area

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ABSTRACT

Environmental indices are an example of index which are used to access the quantitative environmental matters in quantitative. The utilization rate of ground water as a source of clean water supply is still high especially in the areas which are lacking in clean water supply from the dams. Therefore, the ground water quality in these areas need to be monitor continuously to maintain the quality to be in safe level of consumption. Unfortunately, the suitable index to assess the ground water is yet to exist in Malaysia. This study was carried out to create a suitable ground water quality index to assess the ground water quality in a closed open municipal landfill site named Sabak, which is located near the village. The specific landfill site study is namely Sabak open landfill which located near Kampung Sabak, Kelantan, Malaysia and South China Sea. Six sampling stations had been considered in this study which focusing on 32 variables consists of heavy metal, inorganic non-metal, physical characteristic and aggregate indicator. The creation of index is based on two kinds of analyses: that are Principal Component Analysis and another analysis which I put as Benchmarking Analysis. The results showed that seven variables can be used as indicator variables. They were electric conductivity, total dissolved solids, salinity, nitrate, chemical oxygen demand and iron content. The scale used for the index is from 0 to 100 where the increment of the index referring to the improvement of the quality. Results of the application of this index at study site showed that the index value was 26.67 which means that the quality is low.

Keywords: Awareness level, environmental indices, open landfill, ground water quality, principal component analysis, benchmarking analysis