

ABSTRACT

This study describes the utility of Analytical Hierarchy Process (AHP) model to assess the groundwater vulnerability in West Aceh. Groundwater vulnerability is an important issue in the modern time especially for aquifer modelling. The aims of this study are: 1) To produce groundwater vulnerability map using two different DRASTIC indexes, the first is DRASTIC Index by Rosen (1994) and Widyastuti (2004), and the second is DRASTIC Index by Piscopo (2001) from NSW Department of Land and Water Conservation, Australia; 2) To modify the DRASTIC vulnerability parameters using the AHP method. This is illustrated with twenty seven water quality samples collected from the actual study area. Result showed that DRASTIC index varies from 104 to 176 intervals. Hence, groundwater vulnerability index in West Aceh (Meulaboh) contains 3 level ranges, 104 – 128 (moderate), 128 - 152 (high moderate) and 152 - 1756 (high). It is concluded that 22.22% of the study area is moderate, meanwhile 29.63% is high moderate and 48.15% is rather high. Overall, groundwater for this study area actually has a high vulnerability to contamination.

Keywords: Groundwater Vulnerability, AHP, DRASTIC Model, GIS and West Aceh.