



Assessing Contamination Potential of Nitrate-N in Groundwater of Lanyang Plain

Ching-Ping Liang (1), Yu-Lin Tu (1), Chien-Wen Lin (2), and Cheng-Shin Jang (3)

(1) Fooyin University, Department of Environmental Engineering and Science, Ta-liao, Kaohsiung, Taiwan (sc048@fy.edu.tw), (2) Graduate Institute of Applied Geology, National Central University, Jhongli, Taoyuan, Taiwan., (3) Department of Leisure and Recreation Management, Kainan University, Luzhu, Taoyuan, Taiwan.

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C.-P. Liang (1), Y.-L. Tu(1), C.-W. Lin (2), C.-S. Jang (3)

(1) Fooyin University, Department of Environmental Engineering and Science, Ta-liao, Kaohsiung, Taiwan (sc048@fy.edu.tw).

(2) Graduate Institute of Applied Geology, National Central University, Jhongli, Taoyuan, Taiwan.

(3) Department of Leisure and Recreation Management, Kainan University, Luzhu, Taoyuan, Taiwan.

Abstract

Nitrate-N pollution is often relevant to agricultural activities such as the fertilization of crops. Significant increases in the nitrate-N pollution of groundwater are found in natural recharging zones of Taiwan. The increasing nitrate-N contamination seriously threatens public drinking water supply and human health. Constructing a correct map of aquifer contamination potential is an effective and feasible way to protect groundwater for quality assessment and management. Therefore, in this study, we use DRASTIC model with the help of geographic information system (GIS) to assess and predict the contamination potential of nitrate-N in the aquifer of Lanyang Plain, Taiwan. Seven factors of hydrogeology and hydrology, which includes seven parameters - Depth to groundwater, net Recharge, Aquifer media, Soil media, Topography, Impact of vadose zone, and hydraulic Conductivity, are considered to carry out this assessment. The validity of the presented model is established by comparing the results with the measured nitrate concentration in wells within the study area. Adjusting factor weightings via the discriminant analysis is performed to improve the assessment and prediction. The analyzed results can provide residents with suggestive strategies against nitrate-N pollution in agricultural regions and government administrators with explicit information of Nitrate-N pollution extents when plans of water resources are considered.