

Abstract

Jiroft plain is located in the south of Kerman province, which is constantly exposed to pollution due to excessive pumping and unplanned use of its water capacity due to extensive agricultural, industrial, urban and rural activities. A major portion of Jiroft plain drinking water is supplied from groundwater which indicates its importance. Nowadays one of the solutions to protect aquifers is to prevent contamination of aquifers. In this study, we have studied privacy quality of the jiroft plain aquifer against pollution by using DRASTIC model and GIS. Seven parameters for the zoning of aquifer vulnerability was used in the DRASTIC method, including depth to the water table, net recharge, aquifer material, soil type, topography, impact of vadose zone and hydraulic conductivity. The layers prepared in Arc GIS software was weighted, ranked and eventually integrated. final map of Groundwater vulnerability to pollution was provided 5 zones as: without risk of pollution, very low, low, low to moderate and moderate to high, the aquifer vulnerability to pollution was prepared, 25/8, 8/44, 20/86/26 and 17/6 percent of the aquifer area. The main aquifer area has low pollution potential in the central, eastern and southeast parts of the plain. West and northwest areas have more potential for pollution than other areas. Two sensitivity analyses tests including the map removal and the single-parameter sensitivity analyses were carried out. Both of sensitivity analyses tests showed that the vadose zone parameter had the most significant impacts on the vulnerability indexes at the studied region. There is a high correlation coefficient (0.881) between nitrate ion and DRASTIC index indicating the model's efficiency in determining the vulnerability potential of groundwater in the study area. The results of the Jiroft plain aquifer map indicate that most of the agricultural land is in a low vulnerability zone.

Key Words: Groundwater, Privacy Quality, Jiroft Plain, DRASTIC Model, Land Use



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