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Scientific Research

Protecting the Groundwater Environment of Tulkarem City of Palestine from Industrial and Domestic Pollution

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ABSTRACT

Domestic sewage, solid waste, industrial activities, and excessive use of fertilizers and pesticides are the main sources of pollution that threaten the main groundwater aquifers of Tulkarem City of Palestine which add to the problem of water scarcity already experienced by the Palestinians in the West Bank. These aquifers are a vital groundwater resource that provides high quality water. This paper presents the findings of the "Pro Aquifer" project funded by the EU, which aims to reduce groundwater polluting activities in the main municipalities such as Tulkarem. The scientific research of this paper was conducted on the potential and existing sources of groundwater pollution that threaten the Aquifer. GIS tools as well as vulnerability, hazard and risk mapping and pollution modeling were used to examine the impacts of pollution to the groundwater resources in the study area. The local-scale pollution transport model was developed to define the general characteristics of the groundwater flow system as well as to consequently assess the future transport trends of pollution in the groundwater water system of the Tulkarem area. The outputs of this scientific research were used to establish policies and guidelines for reducing water and environmental pollution in Palestinian municipalities. The recommendations produced aim to help Palestinian municipalities prevent pollution of the critical trans-boundary groundwater resources that underlie Tulkarem City. These guidelines provide a methodology to help municipalities begin solving the environmental issues they face. The goals of these guidelines are to protect and prevent further deterioration of the resources of the Mountain Aquifer and to enable and empower municipal officials and staff to achieve these goals.

Keywords: Groundwater Pollution; Environmental Protection; Vulnerability Mapping; Groundwater Modelling; Policy Guidelines

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