

Abstract

This research investigates the wastewater as a pollution source that originate from the Israeli Ara'el colony and Palestinian communities affecting Sardia Wadi, and to determine the quality groundwater in the drainage basin, in order to specify the different pollutants, their possible sources and their impact on the groundwater resources and the socio-economic factors, and to pinpoint the possible measures to improve the situation. Consequently, two rounds of water samples collection have been performed from seven springs in wet season (May) and six springs in the dry season (November) of 2013 and other five wastewater samples have also been collected along the Wadi for each round.

Analyzing the results of wastewater samples showed that the concentration of BOD_5 exceeded the standards in 93% of the samples. The Increase of COD values downstream the Wadi in the dry season may refer to the wastewater discharging from the two villages. Because of the strong correlation between TDS and EC parameters, they acted the same trends with allowable levels. Most of tested samples showed that TSS concentrations exceed the standard (150 mg/l).

Excel and Aquachem software packages were used to analyze springs water results that showed a slight indicators of wastewater pollution. All the physical parameters showed acceptable results according to the WHO. Chemical composition of all samples showed that Ca^{+2} is playing a dominant role, while samples of the dry season exceeded the WHO limits for HCO_3^- levels and Cl^- showed acceptable values compared with guidelines. For NO_3^- content, Al-Matwi is the only spring that exceeded the (45 mg/l) limit.

The microbial data of the study showed a proof of wastewater contamination and has a high content of Fecal Coliforms (FC) and Total Coliforms (TC) compared to Palestinian Water Authority (PWA) microbial data in 2003 which demonstrated the increasing impacts of wastewater during time. All the analyzed trace elements did not exceed WHO guidelines for fresh water, but abnormal value for B in Al-Shalal spring may refer to wastewater contamination. All samples are falling in the earth alkaline water and showed a good and suitable water quality for different for agricultural activities such as irrigation.

Questionnaires data were collected and analyzed by SPSS package showing a confirming indicator for the negative effects on all walks of the people's life that were distinguished into healthy, economic and environmental outputs. As a result of wastewater flow, 92% of respondents confirmed the impact on public health, 47.7 % abandoned their agricultural lands, and 79.1% believed that their land production decreased. In addition, 96.9% of respondents were suffering from the negative implication. The Impact on the aesthetic conditions was negative according to 86% of the respondents.