EFFECTS OF FARMING OPERATIONS ON GROUNDWATER QUALITY IN BASAWA, ZARIA-AREA, NIGERIA

AHMED SALISU HASSAN Research & Technical Services Department National Water Resources Institute, Kaduna NIGERIA JAMIL MUSA HAYATU Training Department National Water Resources Institute, Kaduna, NIGERIA **IBRAHIM UMAR MOHAMMED** Training Department National Water Resources Institute, Kaduna, **NIGERIA**

ABSTRACT

Anthropogenic activities, mostly related to farming are some of the causes of increased dispersion of polluting substances into soil and to the subsurface water mass. Though, the interaction of water with geologic materials during movement also serves as major determinant of its chemical characteristics. Agriculture is viewed as a significant non-point source of groundwater contamination, which poses a serious challenge to the government and other stakeholders involved in environmental pollution abatement and control, on design methodologies or approach to be adopted, to prevent pollution by fertilizers and pesticides. Groundwater sources (e.g. hand dug wells, concrete wells and deep wells), in Basawa area were monitored by monthly sampling and analyses from February to September. Static water level of monitored sites varies between 0.03 and 9.0 m, with the exception of boreholes and a pH range of 5.7 to 8.1. The electrical conductivity, nitrate and phosphate concentration values are within the ranges of 46 to 1,517 μ S/cm, 0.39 to 35.21 mg/L and 0.00 to 6.12 mg/L throughout the entire period of monitoring. The intensity of contamination of ground water sources due to the farming activities was found to be in decreasing order of dug wells, concrete wells, and deep wells.

Keywords: Basawa environs, farming, fertilizer, groundwater, pollution, static water level.