GROUNDWATER CONTAMINATION IN LANGAS; A PERI URBAN SETTLEMENT IN ELDORET TOWN, KENYA

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ABSTRACT

The research assessed the levels of contaminants associated with onsite sanitation in 30 wells in Langas; a peri-urban settlement of Eldoret town. Sampling was conducted during the dry and rainy seasons. PH was measured in-situ. Phosphorus and nitrates were analysed in the laboratory. Faecal Coliforms were enumerated and the groundwater flow was modelled using Processing Modflow for Windows (PMWIN).

Mean nitrate value of 50.9 mg/l and mean Faecal Coliforms was too numerous to count (TNTC) meaning that the community has no access to clean water because the water is contaminated. The level of contamination is mainly attributed to the short separation distances between wells and latrines. The mean separation distance was found to be 17.6 m. The contaminants permeate the aquifer and as a result perpetuate contamination and finally pollution. A 2-dimensional numerical groundwater flow model for the unconfined aquifer showed that groundwater flows at a rate of 1.2 m/day in the study area. The numerical model aided in the calculation of safe latrine-well travel time of 40 days for the estate which corresponded to 48 m separation distance.

From the research, it was concluded that the groundwater in Langas is contaminated and should be treated before consumption.