

FEASIBILITY OF HORIZONTAL SUBSURFACE FLOW AS AN ALTERNATIVE TECHNIQUE FOR WASTEWATER TREATMENT IN DEVELOPING COUNTRIES

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Abstract

Ramadi is one of the Iraqi cities which doesn't have a WWTP. The generated domestic wastewaters are treated by the individual septic tanks. Hence, most domestic wastewater is percolating into the subsurface water and groundwater causing their pollution. The tragedian water shortage scenarios predicted by other studies have motivated the looking for new water resources. The reuse of treated wastewater is one of these alternatives. Therefore, this study tries to investigate the feasibility of using such a cheap and easy controlled technique as a horizontal subsurface flow (HSF) for treating wastewater. A lab-scale reactor has been built up from acrylic, one half of its height was filled with soil that has been collected from a selected region. The reactor was charged with wastewater using batch feeding (30 L each run) and the study lasted for 3 months with an average of one run weekly including the acclimatization period. Results revealed the fairly contaminants' removal, where the average removal efficiency of COD, BOD₅, and TSS were 76%, 73%, and 90%, respectively. In conclusion, the HSF is a reasonable, low cost, less complicated treatment technology that could be adopted as an alternative water resource for irrigation of the green belt.