Abstract

The sewerage system in Palestine is a critical issue to be discussed. Since; the existing wastewater treatment plants (WWTPs) were overloaded which means not functioning and operating within the required standards. Around 54.7% of the Palestinian communities have no sewerage systems and depend on cesspits (PCBS, 2006) .These may cause several environmental and healthy problems. Even rural areas which have sewerage system have poor trained staff. So much attention must be paid to the rural areas and execute a decentralized wastewater management to achieve integrated and sustainable wastewater management in Palestine.

Water is a scarce and precious resource in Palestine, the deficit in water supply reached up to 50 million cubic meters. The consumption for agriculture purposes reaches 40% of total consumption, so to cope with water scarcity to face the raising demand, looking for alternative resources is a must, one option might be to use the treated water for agriculture. A lot of research was done in the Palestinian area to solve problems mentioned above. A suggested method of treatment will be optimism and control under semi arid region, the application of this method was by the pilot wastewater treatment built in Ein Sinya, with the aim of collecting and treating part of the wastewater, passing through Jifna and Ein Sinya.

This thesis aimed to study the low-cost and appropriateness of treating wastewater in comparison to other wastewater treatment technologies for small and large communities. Also it aimed to utilize the results in solving un-controlled sewerage disposal in West Bank. Hypothetically it was assumed that the cost of treatment using Anaerobic Baffled Reactor (ABR) method followed by Activated Sludge system (AS) will be cost efficient in comparison to other WWT technologies, and will minimize the problem of un-controlled sewerage

disposal in Ramallah District, the results then can be optimized to cover the West Bank

Results showed 54.63% removal efficiency of Biochemical Oxygen Demand (BOD_5) in ABR with effluent of 117 mg/l and 89.52% System overall removal efficiency of BOD with effluent of 27 mg/l.

Removal Efficiency of Chemical Oxygen Demand COD in ABR was 54.64% with effluent of 199 mg/l and 89.57% System overall removal efficiency of COD with effluent of 46 mg/l.

ABR showed 21.03% average Removal Efficiency of Total Kjeldahl (TKN) with effluent of 73.6 mg/l, while System showed 61.44% overall removal efficiency of TKN with effluent of 35.94 mg/l.

NH_4^+ concentration increased in ABR, while system removal efficiency of NH_4^+ was 53.52% with effluent of 13.4 mg/l. In general no removal of phosphorous compounds in ABR or overall system occurred.

Total Suspended Solids (TSS) effluent from ABR was 96 mg/l, effluent from AS system was 42.13 mg/l and effluent from the system was 6 mg/l.

Average removal efficiency of total nitrogen was 46.45%. 2.36 log removals of pathogen indicators occurred in ABR, while 4.72 log removals occurred in the system.