

Evaluation of Main and Secondary Channel System of Al-Khalis Irrigation Project

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Abstract

The irrigation project of Al-khalis is one of the most important projects for the Diyala lower basin, which is one of the most productive agricultural areas in the Iraq, divided into two geographical areas, the upper and lower of Al-khalis.

This study conducts on upper part of Al-khalis project, occupied an area of (72850ha.)which included measure seepage losses for Al-khalis Main Canal between the kilometer (5.600) and (9.200) and Secondary Canal (9L), check the water conveyance efficiency, measure and specify the water quality variables of the project by comparing with their standard limitations and calculate a Canadian Water Quality Index (CWQI).

Seepage losses for Al-khalis Main Canal and Secondary Canal (9L), which unlined canal which considered in this study are measured by inflow-outflow method and the results were compared with the results of two empirical equations (Moritz and Molesworth-Yennidunia), by using the reaches on canals. The results of seepage losses in main canal are variable spatially and temporally in five segments (S_1 , S_2 , S_3 , S_4 , S_5), Temporally, observed that seepage losses in December less than the rest

of the months found to vary between (0.055 l/s per m²) to (0.177 l/s per m²), spatially S₁ and S₄ recorded the highest seepage losses from the rest of the sections (0.265 l/s per m², 0.239 l/s per m²) respectively, for Secondary Canal (9L) results show that the seepage is varied spatially and temporally in three reach (R₁, R₂, R₃). Temporally, observed that seepage losses in December higher than rest of months found to vary between (0.0131 l/s/m²) to (0.059 l/s/m²), spatially R₂ was recorded high seepage losses from other reach it varied between (0.053 l/s/m² to 0.059 l/s/m²). The results of water conveyance efficiency for Al-khalis main canal and secondary canal (9L) were (66%, 66.4%) respectively. When compared with the design values, were less than them.

For chemical evaluation, eight sites were selected, where all test results were stratified to the specifications. The results of Canadian water quality Index for both Al-khalis Main Canal and Secondary Canal (9L) were (94.75%), to be described as excellent.