

El-Salaam Canal Water, Sinai, Egypt Part V. Techno-economic study for integrated treatment plant

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ABSTRACT

The water quality of El-Salaam canal, in Sinai, Egypt is chemically and biologically polluted because it is a mixture of Nile water and Drainage water. Complex treatment plant is proposed which consists of three types of plants: primary water filtration and chlorination (PWFC) treatment plant of 20,000 m³/d capacity, ultrafiltration (UF) water treatment plant of 2400 m³/d capacity and brackish water reverse osmosis (BWRO) treatment plant of 2400 m³/d capacity. The aim of this article is to present design considerations, system components, process description and material balance calculations of each plant. Based on the presented techno-economic study, the fixed capital cost of the PWFC, the UF and BWRO are 2,502,000, 2,815,460 and 3,216,000 L.E., respectively, the annual operating costs are 115,500, 443,660 and 1,829,620 L.E., while the cost of one cubic meter treated water is 0.4, 3.7 and 7.38 L.E. for the PWFC, the UF and BWRO, respectively (1 US \$ = 5.5 L.E.).

Keywords: Design; Physiochemical treatment; Ultrafiltration; Reverse osmosis; Economic

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