	Title: ENGINEERING MANAGEMENT AND FINANCIAL ANALYSIS OF AL FASHKHA SPRINGS DESALINATION PROJECT
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Abstract:

Desalination is a fast growing technology that is spreading throughout the world especially in countries with scarce water resources. Desalination technology offers the potential to convert the almost infinite supply of seawater and large quantities of brackish groundwater into a new source of freshwater. Technological advances over the last decades have reduced its cost dramatically and made it to be a realistic option for increasing water supplies in many areas around the world having a role in the water management portfolio. The main objective of this research is to assess the financial feasibility and proposes management model of the utilization options of the PWA proposed reverse osmosis desalination project for Al Fashkha Springs which has an overall capacity of desalinating 22 MCM/year. In this research, and after discussion and agreement with PWA, two options of utilizing the desalinated water have been analyzed including the "Al Fashkha - Jericho" in Jericho Governorate and "Al Fashkha – Al Ubedeyya" in Bethlehem Governorate.

Al Fashkha springs are located at the north western side of the Dead Sea within a nature reserve that is under control of the Israeli occupation. Al Fashkha springs have an estimated volume of water discharged to be around 80 MCM per year which runs eastwards towards the Dead Sea. During the course of this research work, three water samples were taken from Al Fashkha springs and were tested at PWA laboratory and gave the following average results: TDS (2087 mg/l), Salinity (1700 mg/l) and EC (3810 µS/cm). These results show that the water of Ein Al Fashkha is considered as brackish water. The overall calculated cost (desalination and conveyance) per cubic meter for the Al Fashkha – Jericho option is 0.85 $/m3. While for the Al Fashkha – Al Ubedeyya option is 1.06 $/m3.

The BOT agreement is suggested to be adopted for running this project. It is suggested to be signed between potential consortium of international companies and a government agency. The agreement is proposed to have a period of 25 years. Construction of the desalination plant is suggested to go through two phases over 18 months; 11 MCM/year facility for each. This research has shown that the proposed Al Fashkha Springs Desalination Project could be a realistic option for PWA to consider in the future as it will create a new vital water resource that will alleviate the local water supply/demand gap particularly in the southern West Bank..