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Exploration of Potential Areas for Managed Aquifer Recharge in the Eastern Lower Jordan Valley Area

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Water storage in surface reservoirs in arid and semiarid areas is afflicted with a variety of issues such as high evaporation, eutrophication processes and exposure to contamination and accidents. Dams to capture all rare-event floods are, generally, big and expensive structures. Artificially recharging aquifers and storing the water in the underground offer a competing alternative. In this study, hydrogeological, geological, geophysical and hydrochemical investigations were carried out to study the potentials of the eastern side of the Lower Jordan Valley for artificial recharge. The results reveal that relatively extended areas on the eastern side of the Lower Jordan Valley have the potential to accommodate large amounts of recharge water and that the impacts of artificially storing the water in aquifers are to be judged very positive compared to surface storage, especially when the amounts of available recharge water can quantitatively be accommodated in recharge facilities. In addition, the study shows, the advantages of underground water storage compared to surface storage in dams. The potential storage capacities in the different parts of the Lower Jordan Valley are quantified based on rechargeable aquifer volumes and porosities. The potential uses of the recharged water are also elaborated on depending on recharge and aquifer water qualities.