

## **Subsurface Water Storage Assessment Model**

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**Abstract.** Water storage is essential part of water resources management schemes. Due to the high cost and escalating risks of building new surface reservoirs, water managers are becoming interested in employing more effective alternatives. Subsurface water storage is getting attention as one of the alternative. However, due to lack of experience and tools to estimate the cost and effectiveness of subsurface water storage, water managers are reluctant to adopt this alternative. Available tools/models are only case specific; hence in this study we developed a general model for subsurface storage and recovery. The model can estimate the cost of the subsurface water storage and recovery using wells in bedrock and subsurface drains in Alluvium. The model takes monthly river flow, population and per capita demand as inputs to determine capital cost and operation and maintenance costs for the lifespan of the proposed project. To account for uncertainty in the input parameters, model has the capability to perform stochastic analysis as well. Furthermore, the model includes the option of modular expansion of infrastructure through time. This has the potential to reduce total and operation and maintenance costs. An application of the model is advanced based on the conditions in the vicinity of Fort Collins, Colorado.