B-123: Groundwater potential in minor tank watersheds of Sri Lanka

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Recent developments in shallow groundwater abstraction for cultivation has led to an investigation for quantifying the groundwater reserve found in the overburden of hardrock zone of Sri Lanka. The study was carried out from October, 1996 to January, 1998 in the Siwalakulama watershed (3970 ha) in Anuradhapura district. Field surveys were done to prepare maps of soil, landuse, topography, and aquifer thickness. Groundwater levels, tank water levels, evaporation and rainfall were recorded during the study period. A pumping test was done to determine transmissivity and specific yield of aquifer.

Results show that the specific yield of aquifer is 0.015 and average permeability is 5 m/day. No significant drawdown could be observed at a distance of 50 m from the pumped well. Therefore, it can be recommended that wells can be as close as 100 m distance apart. About 6% of the seasonal rainfall percolate down to replenish the groundwater reserve. It was found that the maximum storage in the aquifer is 40-50 mm in minor tank watersheds in the dry zone. About 50% of the potential storage would remain at the end of the dry season confining to bottomlands, and this must be kept as a buffer reserve to prevent occurring of any environmental disaster.

Findings lead to conclude that as 25% of the storage is lost within a short period of time, therefore, only 25% can be effectively utilized for agricultural purposes. In order to control over-abstraction of groundwater and also to provide an assured supply of water, the imperfectly drained area is recommended for locating agro-wells. These findings can be used in future planning of agro-well farming in the dry zone of Sri Lanka.