Hydraulic Design of Proposed Ranney Well for Water Supply Scheme in Kurukshetra

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Abstract : Water is essential for sustenance of life and the ecosystem. Among the various uses of water, the water required for drinking and domestics has the priority over other needs. Water that is required for human consumption must be available in sufficient quantity and should be of good quality. Keeping in view the futuristic needs of water of Kurukshetra town, a durable and cost-effective water supply system with the help of Ranney well has been proposed. This has been proposed on the premise that Brahmsarovar, the largest static water body in the state of Haryana provides sufficient recharge to the groundwater aquifer. In the study, a 30 year design period has been adopted and the water demand up to the year 2050 has been computed. The proposed Ranney well to be constructed in the vicinity of the Brahmsarovar will have a caisson of diameter of 12 m and will be laid at a depth of 30 m below MSL. The laterals, 20 in number, 300 mm in diameter and 15 m in length will be located in two layer separated by 1.5 m. the impact on environment because of the construction and working of the Ranney well is also studied and it has been found that there are no adverse impacts of the proposed scheme. However, the present study is limited to the hydraulics design of the scheme and does not address the structural design of components of Ranney well and the cost involved.

Keywords : drawdown, Ranney well, LPCD, MSL, transmissibility, storativity
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