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Optimization of water conservation structures in the over-urbanized suburbs of Delhi, India

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The Ghaziabad district in Uttar Pradesh is presently considered an industrial and real-state hub mostly due to its proximity to Delhi, the capital of India [1]. The development is taking at fast pace which is an encouraging sign for country's rapid socio-economic development. However it obviously creates serious environmental hazard, especially on air and water [1]. The fast development of infrastructure requires the adequate supply of water both for industry and residential complexes [2]. The groundwater development has exceeded the recharge by more than 50% which has resulted in the fast decline of the water table, ingress of the saline aquifers and high concentration of pollutants [3].

The present study is done in the two most exploited blocks of district Ghaziabad, Loni and Razapur [4]. Decline of the water table in these blocks of district Ghaziabad is about 0.8m per year and groundwater development is more than 150% [4]. This water scarcity can be contained by using the monsoon runoff potential which is about 44.8 Million Cubic Meter (MCM). In the present study total optimization of Rainwater Harvesting Structures is done as per that these water conservation structures are suggested, Large Ponds- 80 Nos, Small Ponds- 180 Nos, Rooftop Rainwater Harvesting Structure- 24,580 Nos and river Bank Filtration in area of -16 Kms. The paper also gives the detailed location and condition in which these water conservation structures can be done in this area. Two pilot projects for artificial recharge of groundwater is also implemented in the area which shows recharge is 30 cubic meter per hour, this recharge has improved the water quality as well besides recovering the water table requiring less energy. Paper will also give the details of the geochemistry to know the present status of water quality and pollution, geophysical survey to know the status of the lithology and various aquifer systems to give over all groundwater management of this critical area.

It is becoming more imperative for newly urbanized area to comprehend the aquifer system and also runoff potential of three months period for discharging the

References:

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