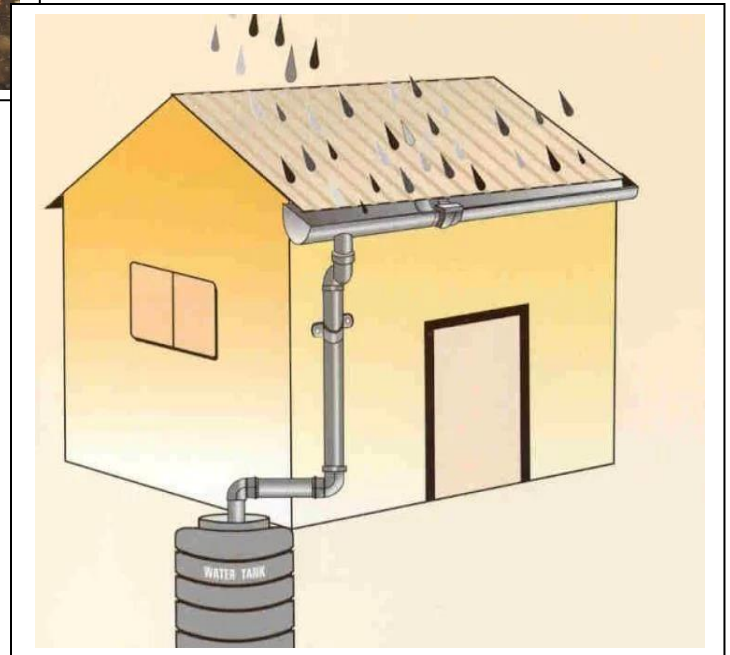




**Siruthuli**

Clean Kovai. Green Kovai.

# Rain Water Harvesting Techniques



## **Executive Summary**

India is blessed with adequate rainfall, yet there are large swathes of dry, drought-prone areas. The increase in population has also depleted groundwater. In such places, rainwater harvesting can provide a lifeline to the conservation of water for survival and improve the quality of groundwater. The rainwater falling on open public spaces, school playground set without percolation flows into nearby drainages which pollutes the rainwater and contaminates the groundwater as well. Construction of rainwater harvesting structures enables recharge of groundwater increasing the water table with the available run-off water. This is the solution to augment water supply to a city with an increasing population and therefore increasing the demand for water.

## **Overview**

A water-surplus Coimbatore is our dream. Rotary with Siruthuli (NGO specializing in water conversation) has been carrying out many activities over the years for groundwater augmentation and the artificial recharge to groundwater. Siruthuli has been recognized by the Ministry of Water Resources with the Ground Water Augmentation Award & Bhoomijal Samwardhan Puraskar in 2008. Siruthuli is also one among the three best NGOs in the world recognized for BEST WATER PRACTICES by Water for Life, Secretariat of the United Nations.

Siruthuli has implemented multiple water harvesting methods such as desiltation/standardization of tanks and anicuts, the creation of new water bodies, implementation of watershed projects, construction of rainwater harvesting structures and river restoration that has facilitated water percolation to a large extent.

## **Need**

- Coimbatore city is located in the hard-rock region hence normal percolation of rainwater during the rainy season will not take place.
- Surface water is inadequate to meet the demands and we have to depend on groundwater.
- Due to rapid urbanization, concrete jungles have prevented infiltration of rainwater into sub-soil drastically and recharging of groundwater has diminished.
- The rapid increase in quantum of bore wells and over-exploitation of groundwater resources has resulted in a significant decline in water levels for entire Coimbatore region.

## **Geography**

Coimbatore is the second largest city in Tamil Nadu and is surrounded by the Western Ghats. Noyyal River which used to flow perennially has an extensive tank system fed by the river. The total area of the district is 3670 Sq.km with a total population of 3.75 Million (as per 2011 census). The average annual rainfall of Coimbatore is 700mm. During monsoon period the excess runoff water from the elevated parts and from building rooftops reaches the low lying depressed parts very quickly. As very less soil

cover exists along the path, it forms a pool of water causing hardships to the citizens and the fresh water evaporates instead of percolation into the ground.

We have been following a method of artificial recharge to groundwater through deep bore wells, depending on the formation of the location. So far, about 600+ structures have been constructed from 2005 onwards with the support of Coimbatore Corporation, CGWB, Rotary Clubs of Coimbatore, Individuals and Private Enterprises. These structures efficiently recharge run-off surface water to the underground aquifers to improve the water level and quality. As a result, a sustainable groundwater table even with meagre / lesser rainfall during monsoon periods is maintained.

### **Benefit**

A study conducted by Siruthuli in the year 2005 measured the groundwater levels in the various zones of the city. The result of the study recommended construction of RWH structures across the city. The study revealed that as Coimbatore is a region with hard rock strata from the top layer, recharge structures with deep bore wells, that can directly feed the aquifers are the best solution for improving the groundwater table, thereby preventing evaporation of the fresh runoff rainwater. As part of this recommended solution, Rotary Club of Coimbatore, to commemorate with its 75 years of social service has proposed to construct 75 RWH structures in and around the Coimbatore City, which will be beneficial to the majority of the population of Coimbatore.

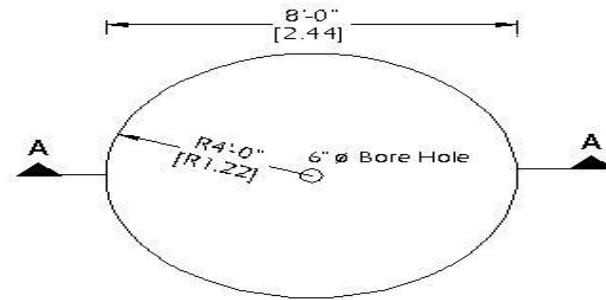
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### **Physical Project**

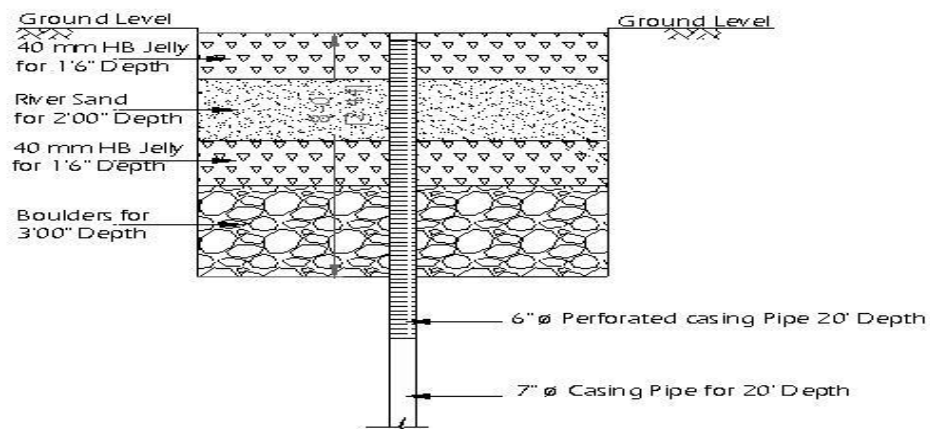
#### **Structure 1:**

The rainwater harvesting structure will have a bore well, a casing pipe, and a filter chamber around the bore well.

- A bore well for an average of 100 meters depth with 6" Dia. casing pipe—both plain and perforated—erected on it. The length of the casing pipe will vary according to the soil formation of the bore well.
- The filling of the filter chamber is as follows:
  - Soling for 1 meter
  - 40mm metal for 0.75 meter
  - Pebbles for 0.75 meter.



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### Structure 2:

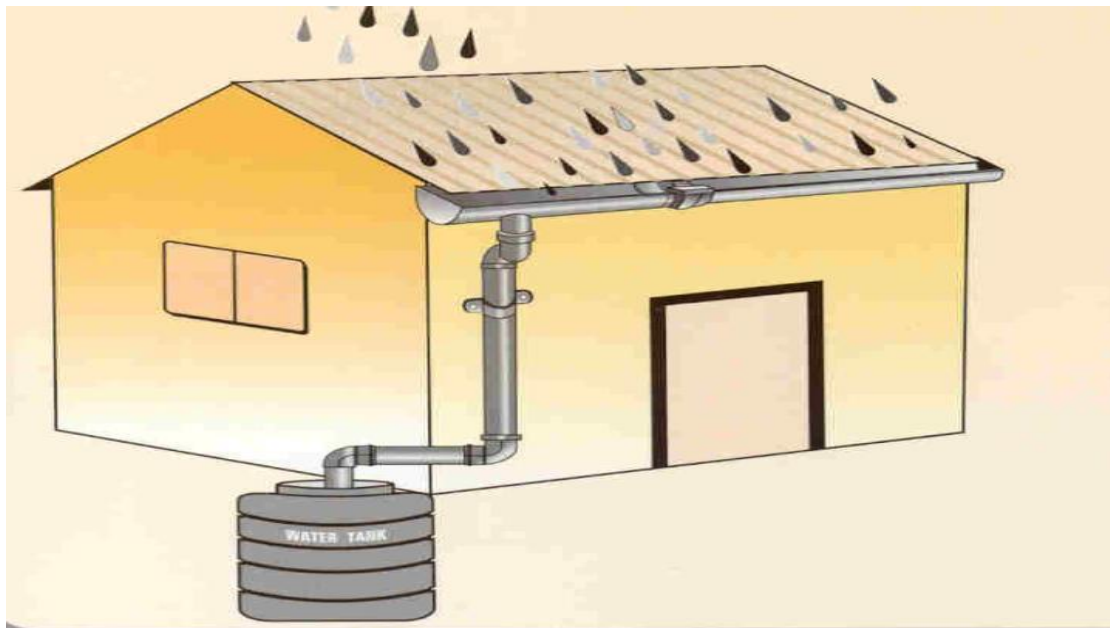
This method will be adopted in locations where aquifer is at shallow depth. In this method, rainwater can pass through a filter, and then allowed to percolate into the groundwater through unsaturated zone below



Ring model rainwater harvesting structure

### Structure 3:

Rooftop Rain Water Harvesting is the technique through which rainwater is captured from the roof catchments and stored in reservoirs. Harvested rainwater can be stored in sub-surface groundwater reservoir by adopting artificial recharge techniques to meet the household needs through storage in tanks. The Main Objective of rooftop rainwater harvesting is to make water available for future use.



### Sustainability

Rainwater harvesting systems are simple which can be adopted by individuals. Rooftop rainwater harvesting systems are easy to construct, operate and maintain. Provides self-sufficiency to your water supply also reduces the cost for pumping of groundwater by providing high-quality water, soft and low in minerals.

The rainwater harvesting structure design with ring requires very minimal maintenance. If required depending upon the location of the structure, every two years the filter materials need to be cleaned for any trash that gets accumulated which involves the minimal cost of labour.

We will be signing MOU with stakeholders and the stakeholders will be provided with necessary instructions on keeping the structure and the area around it clean.

