

What is rain water harvesting?

- Rainwater harvesting is a technology used for collecting and storing rainwater from rooftops, the land surface or rock catchments using simple techniques such as jars and pots as well as more complex techniques such as underground check dams.
- **Rainwater harvesting** is the accumulation and deposition of rainwater for reuse on-site, rather than allowing it to run off.

Uses of rain water

- Recharge under ground water
- Gardening
- Livestock
- Drinking purpose
- for irrigation purpose

Advantage

- Rainwater harvesting technologies are simple to install and operate.
- Local people can be easily trained to implement such technologies, and construction materials are also readily available.
- Running costs, also, are almost negligible.
- Water collected from roof catchments usually is of acceptable quality for domestic purposes.

How we can harvest rainwater?

- **Broadly there are two ways harvesting rainwater.**
 - (i) Surface runoff harvesting .**
 - (ii) Roof top rainwater harvesting.**
- **Surface runoff harvesting:-**

In urban area rainwater flows away as surface runoff. This runoff could be caught and used for recharging aquifers by adopting appropriate methods.

Roof top rainwater harvesting (RTRWH):

- **It is a system of catching rainwater where it falls. In rooftop harvesting, the roof becomes the catchments, and the rainwater is collected from the roof of the house/building. This method is less expensive and very effective.**

Components of the roof top rainwater harvesting system.

- 1- Catchment area**
- 2- Transportation**
- 3- First flush**
- 4- Storage system**
- 5- Delivery system**
- 6- Filtration system**

Catchment area

- The surface that receives rainfall directly is the catchment of rainwater harvesting system. It may be terrace, courtyard, or paved or unpaved open ground.



Transportation

- Rainwater from rooftop should be carried through down take water pipes or drains to storage/harvesting system. Water pipes should be UV resistant (ISI HDPE/PVC pipes) of required capacity.



First Flush

- **First flush is a device used to flush off the water received in first shower. The first shower of rains needs to be flushed-off to avoid contaminating storable/rechargeable water by the probable contaminants of the atmosphere and the catchment roof. It will also help in cleaning of silt and other material deposited on roof during dry seasons Provisions of first rain separator should be made at outlet of each drainpipe.**

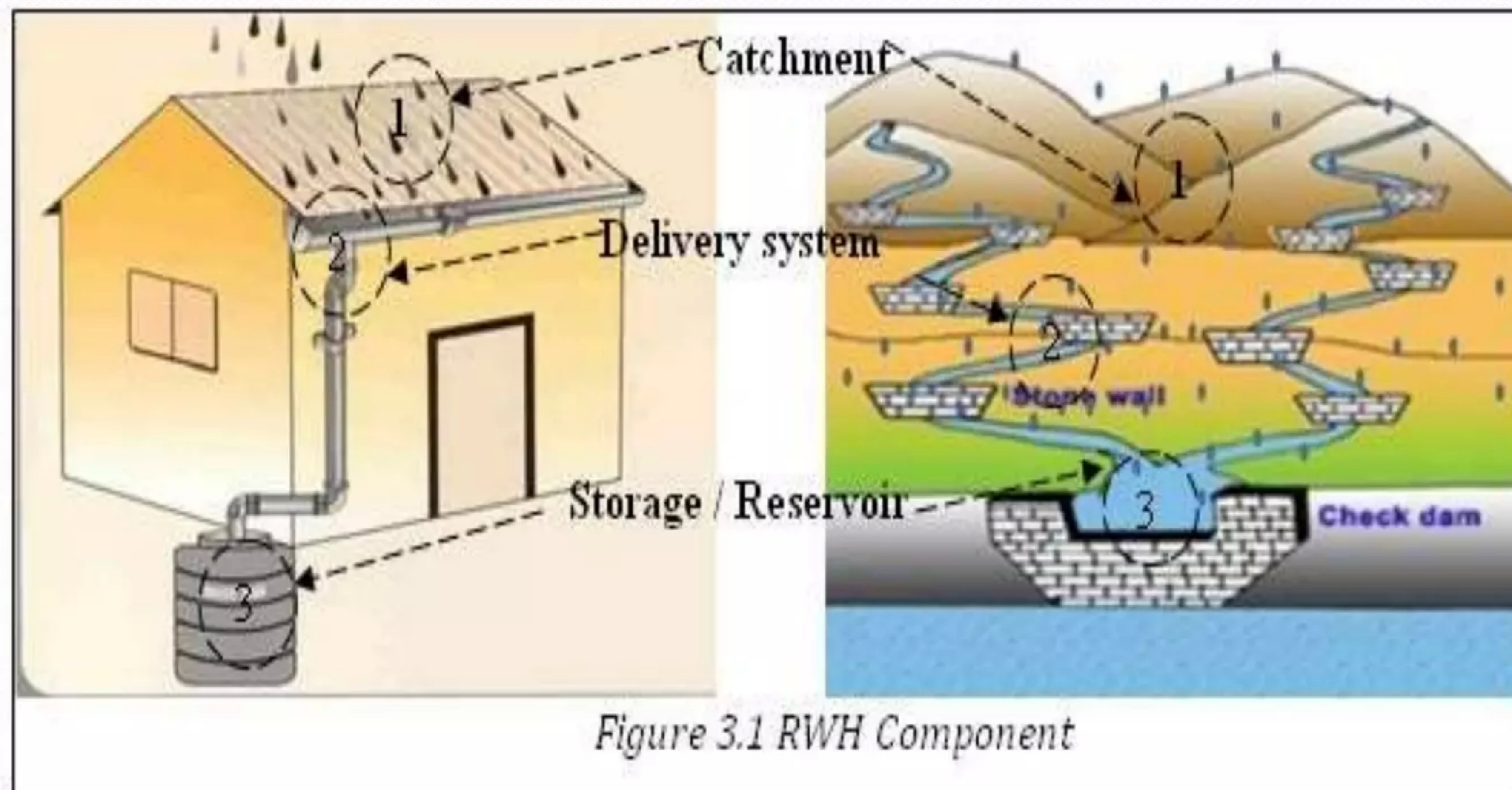
Storage system

- All collected rain water are store in tank or barrels used.



Delivery system

- It is a system to delivered of water for uses. There are use of pumps to take out water from tank and deliver for many purpose . Water is deliver by pips .



Filtration system

- **Filters are used for treatment of water to effectively remove turbidity, colour and microorganisms. After first flushing of rainfall, water should pass through filters. There are different types of filters in practice, but basic function is to purify water.**

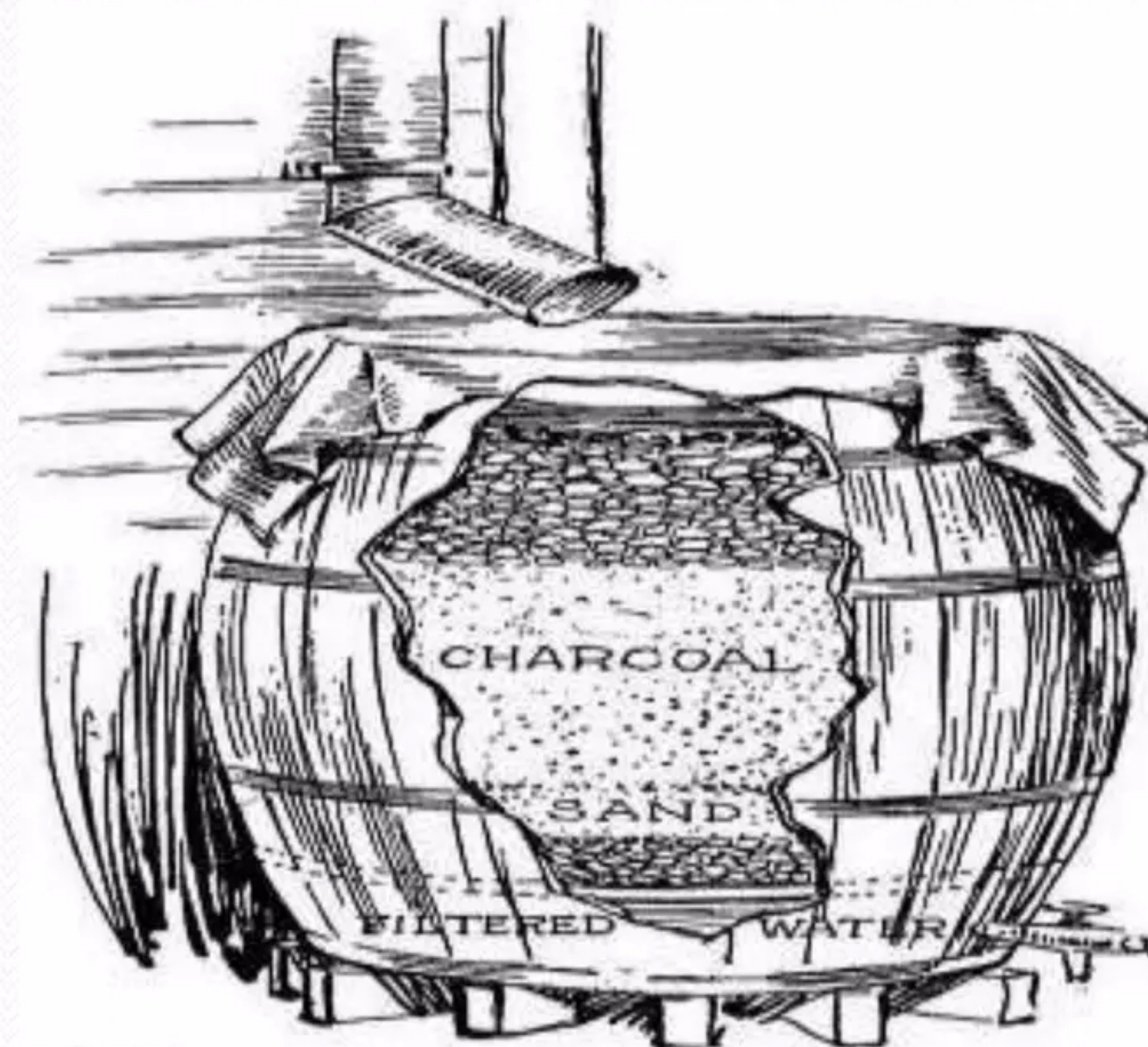
Sand Gravel Filter

- These are commonly used filters, constructed by brick masonry and filleted by pebbles, gravel, and sand as shown in the figure. Each layer should be separated by wire mesh.



Charcoal Filter

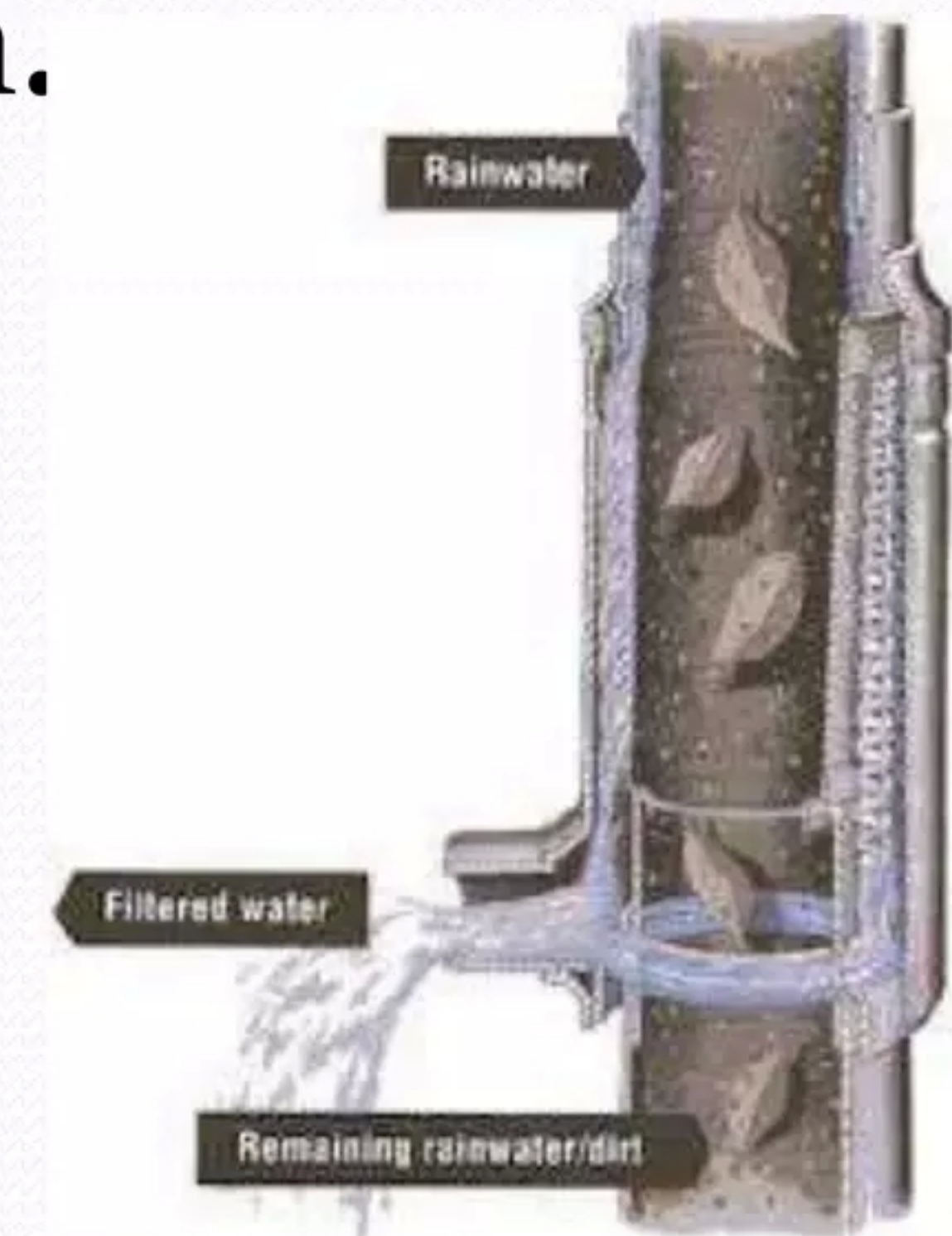
- Charcoal filter can be made in-situ or in a drum. Pebbles, gravel, sand and charcoal as shown in the figure should fill the drum or chamber. Each layer should be separated by wire mesh. Thin layer of charcoal is used to absorb odor if any.



"A Cheap and Easy Way to Make a Filter."

PVC- Pipe filter

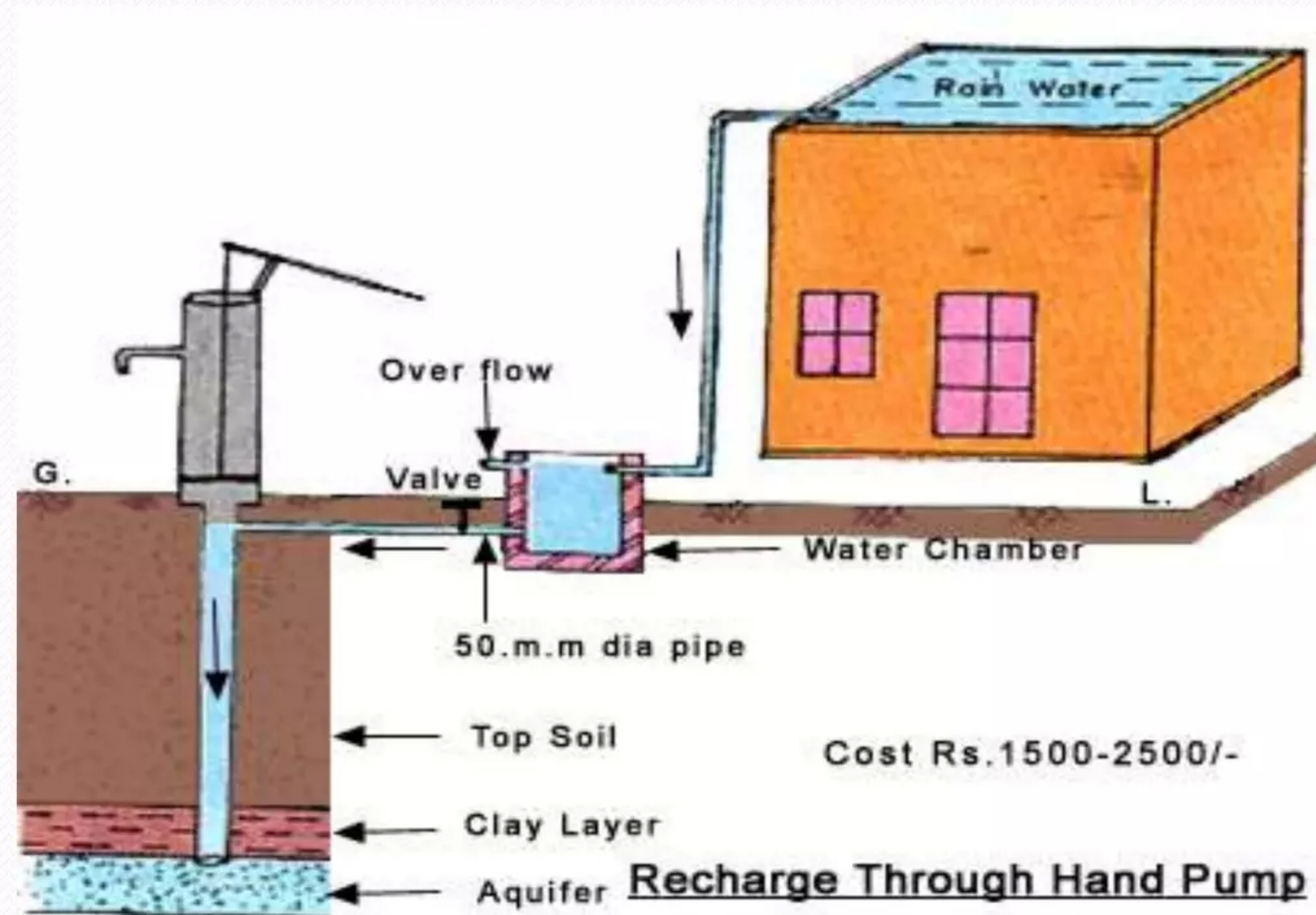
- This filter can be made by PVC pipe of 1 to 1.20 m length; Diameter of pipe depends on the area of roof. Six inches dia. pipe is enough for a 1500 Sq. Ft. roof and 8 inches dia. pipe should be used for roofs more than 1500 Sq. Ft. Pipe is divided into three compartments by wire mesh.



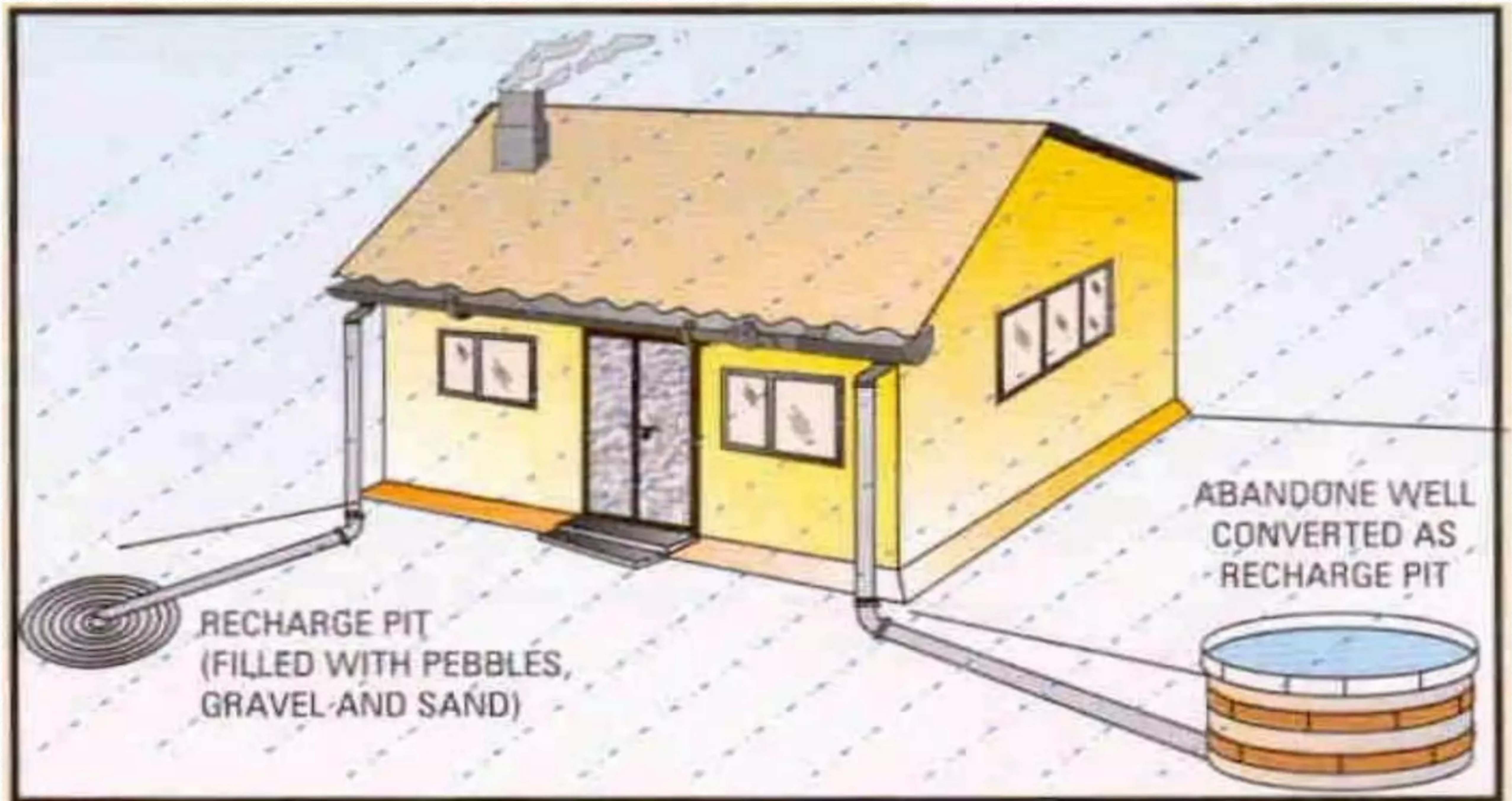
Recharging ground water aquifers

- **Commonly used recharging methods are:-**
 - a) Recharging of bore wells**
 - b) Recharging of dug wells.**
 - c) Recharge pits**
 - d) Recharge Trenches**
 - e) Percolation Tanks**

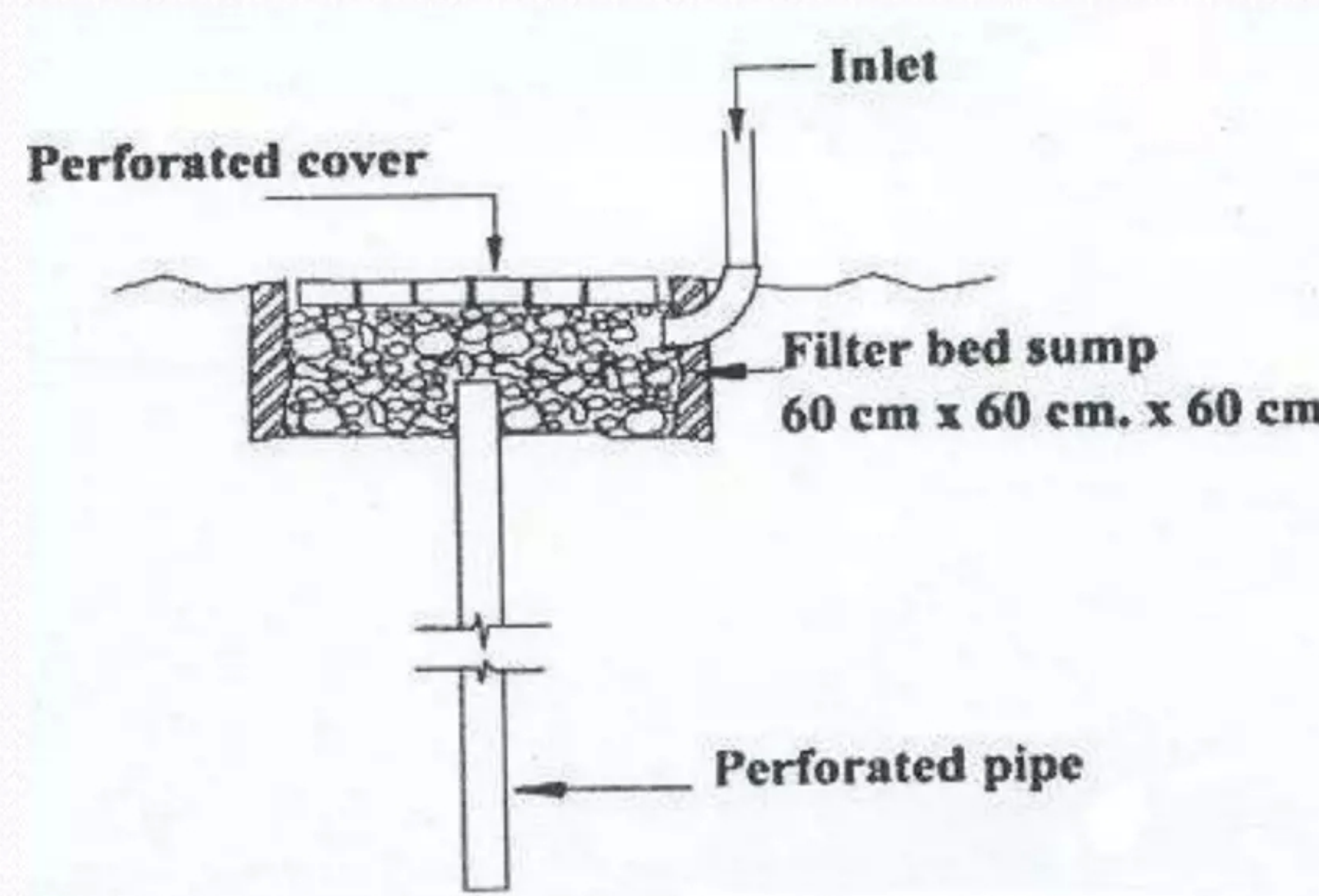
Recharging of bore wells



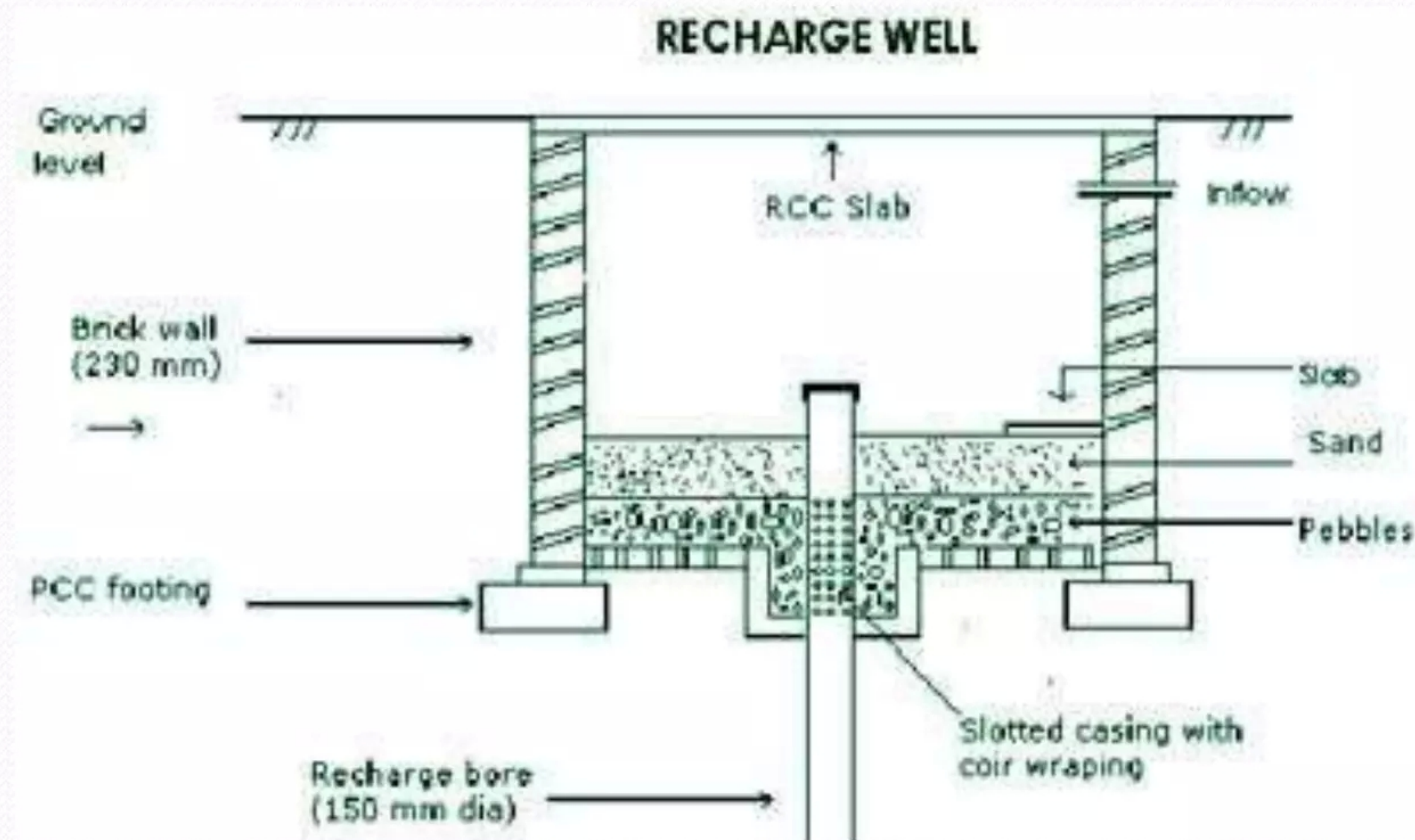
Recharge Pits



Soak away or Recharge Shafts



Recharging of dug wells



Why do people harvest rainwater?

- Rainwater is a precious resource due to increases in demand from our ever growing population. Changes in rainfall patterns in the UK have seen both drought conditions and flooding
- Rainwater harvesting can provide around 50 per cent of a family's water needs.
- This not only saves water, but saves money and reduces our impact on the environment.
- **To inculcate a culture of water conservation**
- **To reduce soil erosion**

Examples

- In the state of Tamil Nadu, rainwater harvesting was made compulsory for every building to avoid ground water depletion.
- In Rajasthan, rainwater harvesting has traditionally been practiced by the people of the Thar Desert.
- At present, in Pune (in Maharashtra), rainwater harvesting is compulsory for any new society to be registered.