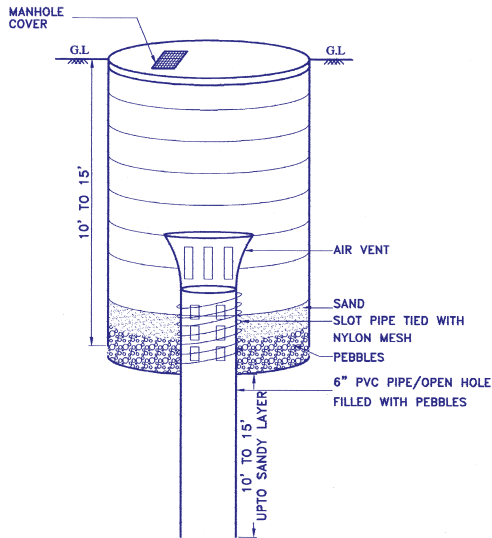


**FIG. 4 PERCOLATION/RECHARGE WELL CUM BORE PIT**

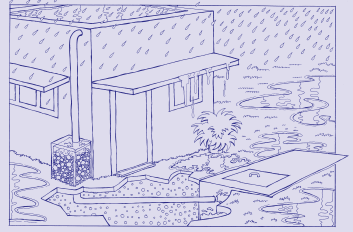


In areas where the soil is likely to be clayey upto, say, 15ft. and above, it is advisable to go in for a percolation/recharge well upto 10 to 15ft. and a hand bore pit within this well upto a depth of another 10 to 15 ft. from the bottom. A PVC pipe of 4 or 6 in. diameter is inserted into the bore for the entire length and slots are made on the casing and a nylon mesh is wound around it. The outer well is filled with a layer of pebbles and coarse river sand. These precautions are taken to prevent silt from entering the bore pit. The same method can be used for charging an existing live or defunct bore well.

## **DRIVEWAY RUNOFF HARVESTING**

**T**here is a general feeling among people that only rooftop water is fit for harvesting and not the driveway runoff. This is so because surface runoff both at the micro and macro

levels appears to be dirty and hence thought unfit for harvesting. It should be borne in mind that it is only suspended impurities and can still be put into a recharge well, where the soil will be able to filter it. It is true that surface runoff water should not be led into a sump for immediate use or to a source well.



In a large number of houses/flat complexes, the driveway area (all around the builtup area) will be as much or even more than the rooftop area. Rainwater falling on this area will be quite large and in addition, a sizeable quantity of rooftop water will also contribute to this, which eventually runs off to the street through the gate(s). Hence, harvesting driveway runoff in such places becomes very important. This should be harvested by intercepting it with the help of a shallow gutter (covered with a perforated RCC slab) near the gate(s) and directed to a recharge well(s). Such driveway runoff should not be led into a recharge pit since the runoff will contain large amounts of silt and will result in clogging. A cheaper alternative to the gutter will be a bump (speed breaker).

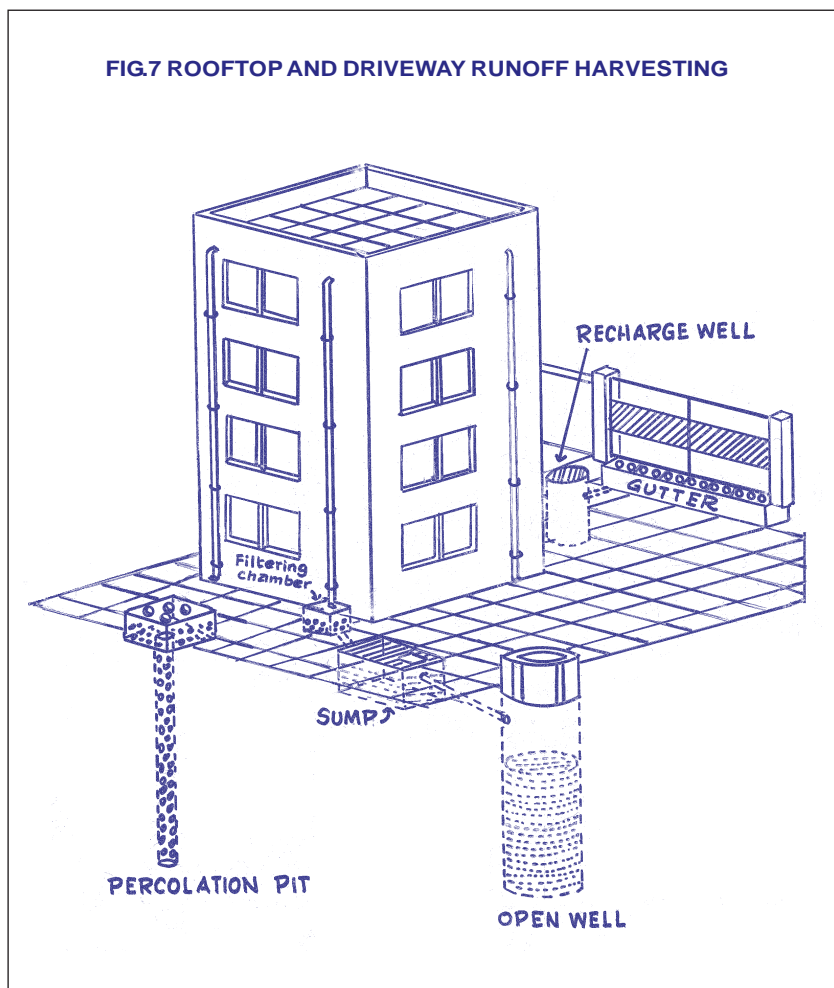
## **COST OF RAINWATER HARVESTING**

**T**he cost of implementation of rainwater harvesting systems in a house/flat complex will depend on the size of the premises, number and location of the rooftop pipes, nature of the soil as well as on the availability of an open well. If the site has an open well there will be no need for creating a recharge well and harvesting will therefore be cheaper. Secondly, digging a recharge well in a place where the soil is reasonably sandy will be less expensive than in a place where the soil is clayey. The cost will vary from Rs. 3000/= for an independent house to Rs. 30000/= for a

flat complex, where the cost is shared by the number of flats and will therefore be quite small. Once put in place, the harvesting structures do not require any serious maintenance and hence there is no recurring expenditure.

## RAINWATER HARVESTING IN A FLAT COMPLEX

FIG.7 ROOFTOP AND DRIVEWAY RUNOFF HARVESTING



# RAINWATER HARVESTING IN INDIVIDUAL HOUSES

FIG.5 RAINWATER HARVESTING USING OPEN WELL AND RECHARGE WELL

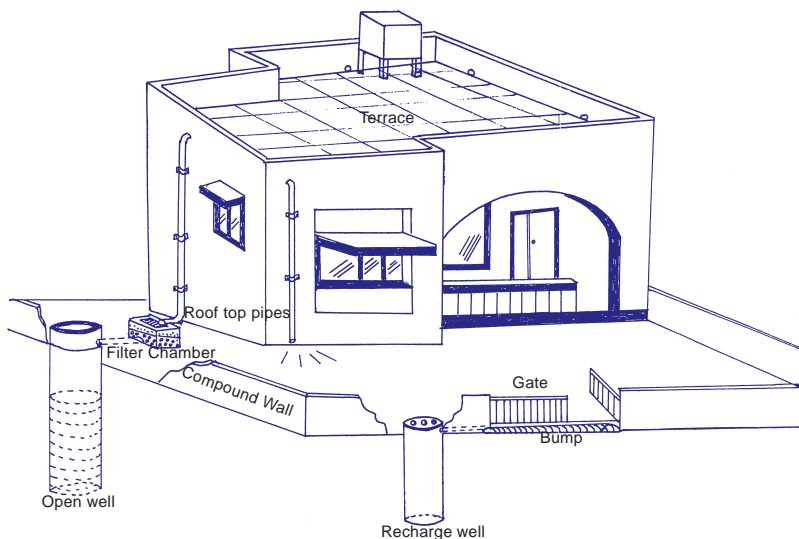
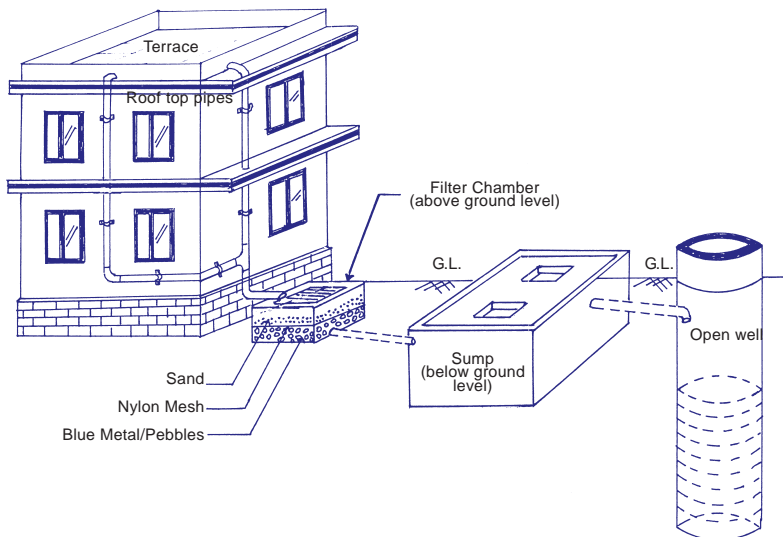
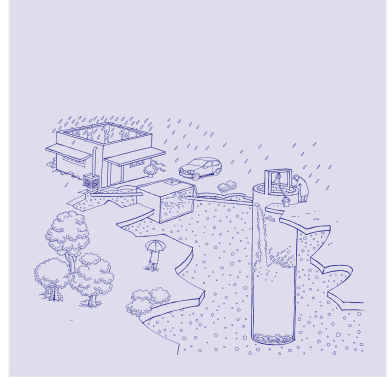


FIG.6 RAINWATER HARVESTING USING SUMP AND OPEN WELL



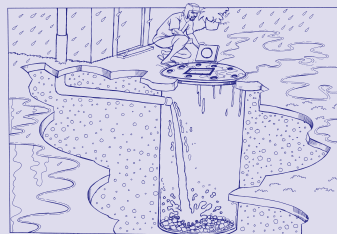
## **RAINWATER HARVESTING - PRECAUTIONS, SUGGESTIONS AND TIPS**



1. If there is already an open well within the premises, diverting some or all the rooftop water into it, should be given priority, particularly in areas where the soil is clayey or rocky. This will save on the cost of creating a recharge well.
2. If the well is either dry or contains water of non-potable quality, avoid using a filter. It is essential only if the well water is suitable for drinking and cooking.
3. Avoid using a filter unless it is really essential, since they are not scientifically designed and leads to overflow and wastage of water from the filter itself.
4. A recharge well (fig.2) though it is more expensive than a recharge pit (fig.3) is definitely a better rainwater harvesting structure. The former will take in more water and can also be desilted easily, whereas a recharge pit will get clogged very often and will have to be abandoned.
5. No filtering is required for leading water into the soil for recharge purposes and therefore a recharge well should not be filled with pebbles/blue metal/brickbats. Ingested water in a recharge well moves to the source (open or bore well) through the soil and in the process gets filtered of even bacteria.
6. Efficient recharge systems are likely to cost more and therefore cost alone should not be the sole criterion for choosing the appropriate system.
7. In premises where rooftop rainwater is being directed into sumps for immediate use or to source wells or bore wells, care should be taken to keep the terrace clean.

Firing crackers during deepavali, allowing pet animals to defecate, washing clothes, conducting dinner meetings should be completely avoided.

8. Recharge wells will have to be desilted once or twice a month during monsoon and once before the onset of the monsoon. The filter chambers, if any will also have to be cleaned by removing the pebbles and sand, washed and dried once during and before the monsoon.



## **IMPORTANCE OF RAINWATER HARVESTING IN COASTAL CITIES WITH SPECIAL REFERENCE TO ITS COASTAL SUBURBS**

**I**n coastal cities like Chennai, rainwater harvesting is very important, since what is not harvested runs and falls into the sea without in any way being beneficial to the residents. In inland cities, what is not harvested gets discharged into a nearby tank or river and proves to be beneficial for people living downstream.

Within coastal cities, rainwater harvesting in suburbs, which are located within one kilometre from the coastline is very important. In Chennai, Besant Nagar, Thiruvalluvar Nagar, Valmiki Nagar etc. form part of these suburbs, where the quality and exploitable quantity of ground water is good. This is due to the sandy nature of the soil, which allows rainwater to percolate fast and enrich the ground water source. Secondly, digging of recharge wells is also simple once again due to the sandy nature of the soil and that they need not be very deep.

Lastly, overexploitation of ground water and failure to harvest rainwater in these suburbs, will result in seepage of salt water from the sea into the aquifer leading to a permanent and irreversible damage to the ground water source.

## WHAT WE MUST DO

**L**et us make sincere attempts to harvest rainwater falling on both rooftop as well as the open area all around our homes and prevent any further deterioration of our ground water source. If its quality and exploitable quantity is good enough and if we are planning to exploit the same in future, it is only fair that we take steps to sustain it, for otherwise, we would be cutting the goose which lays golden eggs.

We should feel proud of harvesting rainwater in our own houses and flat complexes since it makes us more self sufficient and less dependent on the government for our requirements of fresh water.

*For any assistance please contact :*

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**WATER SCARCITY DIVIDES PEOPLE  
RAINWATER HARVESTING UNITES THEM**





**Visit the Rain Centre**, a model house on rainwater harvesting (RWH), the country's first such centre. It is a one-stop place to learn about various RWH designs, cost estimates and a list of contractors to implement RWH in independent houses, flat complexes, offices, factories, Institutions etc.

#### **Features inside Rain Centre:**

- Poster panels on traditional harvesting, need for harvesting, step by step method and success stories.
- Working RWH models and screening of RWH films

#### **Features outside (but inside the compound):**

- Rooftop harvesting in sump, loft tank for immediate use and open well for recharging.
- Driveway (surface) runoff harvesting through gate gutter and recharge well.

The Rain Centre is co-sponsored by the Chennai Corporation, Metrowater Board, Tamilnadu Water Supply and Drainage Board and Centre for Science and Environment, New Delhi.