# IV

# INTEGRATED GROUNDWATER RECHARGE AND HARVESTING GRID

## Objective:-

To build and sustain a grid to recharge and maintain groundwater resources by networking and integrating all present and potential watercourses, right from linking roadside burrow pits, rubble and stone mines, natural and artificial ponds, wells, existing and dried nalas as well as augment and sustain the grid by erecting structures, watercourses and recharge pits so as to ensure that ground water levels are augmented and maintained to meet the rising water needs as well as the increasing demands of flora and fauna on water resources, keeping in view the dangers of drought and water shortages.

## Justification:-

The road length in India is approximately 3 million km in addition the length of other water courses, periodical and seasonal, is approximately 1 million km. On both the sides of the road, burrow pits and trenches are dug to excavate soil for maintenance purpose while riverbeds are used for excavation of sand and other material. Moreover, with the national and regional road network programs in full swing, lot of areas are earmarked for excavation of stone, murm and other material. Besides the railways have their own quarries for excavation of metal for their 1 lac km long rail network. All these excavation are continuously being done with total disregard to their impact on ground water. In addition large mining areas are also opened up and left unattended after the mines are exhausted. Therefore it is necessary to prepare integrated mini, micro and macro grids to network all such present and potential water bodies and courses so that they are properly maintained and ground water recharge is ensured.

In fact once a grid is prepared then it will throw up sites that excavation could be permitted so as to eventually excavate water storage pond for a village supply or excavate the murm from adjoining farmer's fields. An open well could be excavated at no cost to the farmer. Similarly, the burrow pits along the roadside could be linked to such wells or soak pits could be constructed to ensure ground water recharge at regular intervals. Farmers could be motivated to plant fruit, fodder and fuel trees along these water courses which will benefit everyone. All this will ensure that no water is wasted or allowed to damage farms and fields. This will also act as insurance on account of the damage caused by monsoon havoc.

It may be difficult to quantify the exact benefits received by such a grid but it will certainly contribute to groundwater recharge capability of an area. For example, if you consider a 100 km road length/river course grid then once the work is complete assuming that there will be at least three precipitation cloud burst per season, the stored ground water would support a minimum of 600 new wells or support additional irrigation potential of 10,000 acres. This is assuming the normal monsoon pattern in the country which covers about 65-70 per cent of Indian land mass. By using more sophisticated techniques like satellite imagery and Tritium tracers studies more quantification may be possible over a period of time. But it will be done at a marginal cost since all excavation will ensure that it leads to ground water increment rather than depletion.

Integrated water harvested grid based on linkage of roadside, storm water gutters/ borrow pits/ stone mines dotted with percolation pits/ open wells/ water storage tanks utilising and networking the 3 million km long road network as well as 2 million km long river/ nala/ other water courses networks.