

Ground Water Recharge of Aquifer by Water Which is Wasted as Over Flow in Dams

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Abstract—The project involves the usage on water which is wasted in dams as over flow by transferring it to the under ground water table by the means of bore wells. By the means of this project one can not only store the water which is wasted in dams during rainy season but also recharge the ground water for future use. And even small hydro electricity motors can be fitted in in the pipes such that when water enters the pipe it generates electricity which can be used to lift the water up again when needed from the under ground aquifer this can be done to regain some or full amount of electricity which is lost to lift the water from the aquifer the complete details are Given below

1. INTRODUCTION

Dams and reservoirs are structures which are built for the main purpose of storing water for future use and also for the purpose of flood control, hydro electricity, etc. the dams which are built to store water can store up to a certain limit these dams receive maximum water during rainy season during which the river is full when the dam reaches its maximum capacity the rest of the water is released which is wasted hence by storing some of this water in the under ground water table by the means on aquifer rocks which can increase the productivity of that dam.



Fig. 1.1: Dam Stored to its Limit

The water which is stored in the dams are not sufficient enough for proper usage. A dam which is full stored to its capacity is shown below. (Fig. 1.1)

When these dams are stored to the limit the gates are opened and the water is let to flow this is showed in (Fig. 1.2)



Fig. 1.2: Water overflows a dam

The over flow water is wasted hence by making this project apply for all dams once it is done the water table and irrigation of that area is increased and water is provided for the people present there with out any harm for nature.

In india 80% of india's water supply flows as river which is stored in dams for use but due to the limited storage capacity of dams the there is always a shortage of water the research involves the usage of the water which is wasted. The below table (fig1.3) shows the amount of water which is used the amount of water which is wasted as runoff and the land area available for storing the water it is classified on the basis of different river basin

TABLE 3

Basin wise distribution of utilisable surface water resources (Source: Central Water Commission (1993), p 12, and Central Water Commission (1996), p 15)

River basin unit	Location	Draining into	Catchment area (% of the country)	Average annual runoff (km ³)	Exploitable surface water (km ³)
1 Ganges-Brahmaputra-Meghna	Northeast	Bangladesh	34.0	1 105.6	274.0
2 Minor rivers of the northeast	Extreme northeast	Myanmar and Bangladesh	1.1	31.00*	
3 Subarnarekha	Northeast	Bay of Bengal	0.9	12.37	6.8
4 Brahmani-Batarani	Northeast	Bay of Bengal	1.6	28.48	18.3
5 Mahanadi	Central-east	Bay of Bengal	4.4	66.88*	50.0
6 Godavari	Central	Bay of Bengal	9.7	110.54	76.3
7 Krishna	Central	Bay of Bengal	8.0	78.12	58.0
8 Pennar	Southeast	Bay of Bengal	1.7	6.32	6.9
9 Cauvery (1)	South	Bay of Bengal	2.5	21.36	19.0
10 East flowing rivers between Mahanadi & Pennar	Central-east coast	Bay of Bengal	2.7	22.52	13.1
11 East flowing rivers between Kanyakumari & Pennar	Southeast coast	Bay of Bengal	3.1	16.46	16.7
12 West flowing rivers from Tadi to Kanyakumari	Southwest coast	Arabian Sea	1.7	113.53	24.3
13 West flowing rivers from Tapi to Tadi	Central-west coast	Arabian Sea	1.7	87.41	11.9
14 Tapi	Central-west	Arabian Sea	2.0	14.88	14.5
15 Narmada (2)	Central-west	Arabian Sea	3.1	45.64	34.5
16 Mahi	Northwest	Arabian Sea	1.1	11.02	3.1
17 Sabarmati	Northwest	Arabian Sea	0.7	3.81	1.9
18 West flowing rivers of kutsh and Saurashtra	Northwest coast	Arabian Sea	10.0	15.10	15.0
19 Rajasthan inland basin	Northeast	-	0.0	Negligible	-
20 Indus	Northwest	Pakistan	10.0	73.31*	46.0
TOTAL			100.0	1864.33	690.3

Notes: *Earlier estimates reproduced from Central Water Commission (1988). (1) The assessment for Cauvery was made by the Cauvery Fact Finding Committee in 1972 based on 38 years' flow data at Lowe Anicut on Coleroon. An area of 8000 km² in the delta is not accounted for in this assessment. (2) The potential of the Narmada basin was determined on the basis of catchment area proportion from the potential assessed at Garudeshwar as given in the report on Normanda. Water disputes Tribunal Decision (1978).

The above table shows that almost 1864.33 cubic kilometer of water is wasted as runoff which can be used by this method of recharging. The site on which the land is constructed is also supportive of this because the dams are constructed on sites where the land is made up rocks like sandstone and limestone etc which are non porous, impermeable, etc which prevent the seepage of water to the ground hence they can be stored it also means that the aquifer present below the is dry and can absorb a large amount of water the site on which the dams are constructed are usually free from faults and folds to the least possible level to minimize the loss of water and to give land stability to the dam this also keeps the aquifer present below dry and hence it can store a large quantity of water in addition to the water stored by the dam which can be used reducing the water shortage present to a minimum or no water shortage at all. This method is much better than the other method because the it is eco friendly and it is economical and it is beneficial by both ways 1) usage of water which is wasted as run off 2)it recharges the under ground water table which can be used later. Once this method is applied it can be maintained by installing the closeable doors present at the bore well pipes this can be even more advanced by creating channels along the upstream side moving away from the dam the channels may be installed with seriesof bore wells

Once the recharge begins the entire under ground water table of that location is flourished hence irrigation and needs of water are satisfied hence which in turn leads to better cities economic growth welfare of people etc

2. MAIN TEXT

The process of which to divert the flow of water from the the dam to the bore well pipes can be by creating a series of smaller channels in the direction opposite to the upstream side such that when the water level increases the gates provided at these channels can be opened before opening the dam gates and and bore wells should be present in these channels and the each pipe should have its own control valve which is operated to maintain the amount of water that is used to recharge the under ground water table.

The future use of this process is unlimited as it is very easy to accomplish and gives very good result and solves the problem of shortage of water and also increases agricultural productivity which in turn increases the economic growth all this is achieved from water which is wasted a over flow from rivers.

Note- This completes the project details all though there Are many variables which are to be taken into consideration all of which can be solved for any questions related to this please contact the below email