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Topic of Research **DEVELOPMENT OF RAINWATER HARVESTING MASTER PLAN IN INSTITUTIONAL AREAS.**

FINDINGS

Rainwater Harvesting Masterplan is a water conservation method adopted in modern times by our society . To develop such a masterplan we need to identify and demarcate the study area . In this case one educational institution has been selected to develop its masterplan in synopsis .However , in the overall Ph.D thesis 35 educational institutions have been covered in the Masterplan .

Past historical rainfall data obtained from authentic source like Indian Metereological Department , Pune , India annual report is analyzed for the area under study .In this analysis , highest , lowest , mean and variation of rainfall is studied . A comparative analysis of the rainfall data is made and average frequency of rainy days is calculated . Next , average frequency of heavy rainfall days is calculated . This is compared with maximum Rainy day and maximum heavy rainfall day. Rainy day is compared with frequency of dry days for the peak month of August . After obtaining the frequency of rainy day , the rainfall return period is calculated . Once peak rainfall per day for the peak rainfall month of August is calculated , evaporation loss and evapotranspiration loss is estimated in this research paper .

After estimation of peak rainfall per day alongwith losses , runoff volume is calculated for the Institution under study. To calculate the runoff volume , the roof top area , ground paved area , ground unpaved area is calculated . Also the runoff coefficient for roof top , ground paved , ground unpaved area is found from authentic data source like National Building Code 2016 ; and estimated for particular runoff surface . Once runoff volume is estimated for the institution under study , hydrogeological characteristics of the aquifer location area for the institution is studied and relevant authentic data sourced from district brochure of Gautam Buddha Nagar is compiled . After compilation of aquifer data , aquifer discharge is calculated for the institution under study .Finally , in order to design the rainwater harvesting structure , average frequency of rainy day and rainfall return period data is compiled . Type of rainwater harvesting structure in this case recharge well , raingarden and recharge trench is finalized for this institution as suitable structure ; depending upon the type of catchment available within the institution . Design calculations are made for each type of structure and number of rainwater harvesting structure of different types are finalized