



## RAINWATER CONSERVATION IN THE HILLY REGION IN MEDHA CIRCLE OF JAWALI TEHSIL

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### ABSTRACT:

*Water is essential for socioeconomic development, Such as population increases and development demands for increased allocations of groundwater and surface water for the domestic, agriculture and industrial sectors, the pressure on water resources intensifies, leading to tensions, conflicts among users and excessive pressure on the environment. The increasing stress on freshwater resources brought about by ever rising demand of water. Water is the fundamental need of every living creature. It is a valuable national recourse so maximum utilization of available water resources and their conservation is immensely important. The demand and supply of water has to be taken into consideration for water management. In this paper an emphasis is given on the rainwater conservation of Medha circle in Jawali tehsil.*

**KEYWORDS:** Water Conservation. Potential Zone, Rainwater Harvesting.

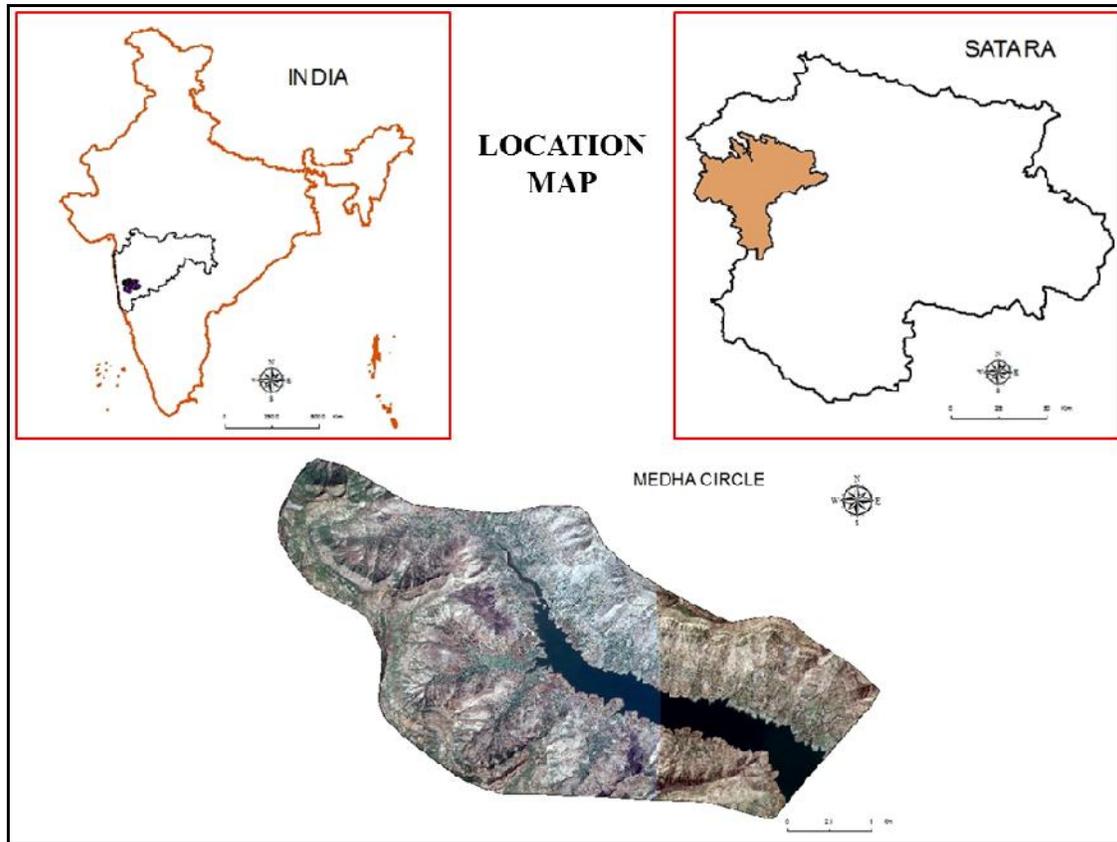
### INTRODUCTION:

The Rainwater Conservation refers to the management and storing of natural precipitation and anticipation of losses through runoff, evaporation and seepage of rainwater and all other hydrological studies and engineering interventions aimed at conservation and efficient utilization of the limited water endowment of physiographic unit, such as a micro-watershed. The watershed is also referred to as the catchment area of a streams. Conservation is an act of preserving resources from decay, loss or injury, otherwise to handle the resources with care and safeguard against destruction. Water is one of the renewable resources (S. B. Zodage et al.). The water resources are not evenly distributed over the state as well as country due to varied hydrogeological conditions and high variations in precipitation both in time and space. Even in high rainfall area, like Medha circle in the Jawali tehsil of Satara district, Maharashtra, water scarcity is felt in the summer months. As large quantities of rainfall are going to dam as runoff, it is better to harness this wasteful runoff by adopting proper scientific conservation measures and constructing suitable rainwater harvesting structures at appropriate locations.

### STUDY AREA:

The Jawali tehsil is located on 17°, 57" and 17 °, 25" north latitude and 73°, 32" and 73°, 57" east longitudes. The Jawali tehsil covers on area of 864. 53 sq.km in Satara district, with a height of 679 meters above mean sea level. According to 2011 census the total villages of Jaoli tehsil is 153. The shape of the tehsil is elongated type, which shows more length in the north-south direction. The Jawali tehsil is situated at the Sahyadri mountain ranges. The Pune-Bangalore National Highway No. 4 passes through east of the Jawali. The total geographical area of Jawali tehsil is 58009.69 hectares from which the total agriculture area is

18415.3 hectares. The total forest area is 19413.00 hectares. The total cultivable waste area including goucher and groves is 10401.93 hectares. The total non-cultivable area is 5361.21 hectares.



#### **CLIMATE AND RAINFALL:**

The climate of Jawali tehsil is divided into four major seasons: The maximum temperature is between 34<sup>o</sup> to 38<sup>o</sup>c and minimum temperature between 10<sup>o</sup> to 15<sup>o</sup>c in the tehsil. The rainfall varies widely in the different part of the tehsil depending on their closeness to Sahyadri. The maximum rainfall received in the month of June, July, August and September from southwest wing of monsoon winds. The average rainfall of the study region is 1250 mm. As per geographical condition distribution of rainfall is uneven. The soil of the Jawali tehsil generally falls under three main categories. Laterite soils in hilly region, Lighter black soils on the slopes and Medium black to deep Black soil in the plains. Laterite soils are subjected to heavy leaching and high degree of erosion.

#### **DATABASE AND METHODOLOGY:**

The methodology adopted for the development of road network is to maintain digital database using spatial and non- spatial data. Spatial data includes all the topographic and thematic maps. The Medha circle road map prepared from Survey of India toposheet (SOI) and satellite image and it provides information about the exact location of drainage network, and further it is updated with satellite data to know newly formed stream. In the present study survey of India (SOI) topographical map of 47G/13 and 47G/14 on 1:50,000



scale used for creation of base map. ArcGIS- 9.2, Global Mapper and ERDAS- 9.1 softwares are used in this work.

### **SIGNIFICANCE OF THE STUDY:**

These are so many uses of water and day to day use and fulfil necessary needs water is required. The proper management of water leads to enhancement of the quality of water. It is necessary that we should preserve water which is available in a rainy season and use it in summer when there is scarcity. On earth water is available amply but the distribution of water is not even across the all regions of the world. Where there is drinking water amply available, there is no question of scarcity of water. But where these are a less saturation of water, there the problem of water is very severe and serious. In India so many villages are affected with the scarcity of water. So, it is necessary to preserve the natural resources of water in the environment. To protect and develop these natural resources already available become important task in conservation of rainwater.

### **STATEMENT OF THE PROBLEM:**

In the Medha circle rainwater recharge enhancements should not be regarded as a universal solution for resource imbalance because of the land area over which recharge from monsoon precipitation can be economically enhanced is always limited compared to the potential dry season demand from irrigated agriculture but can be useful for sustaining drinking water sources.

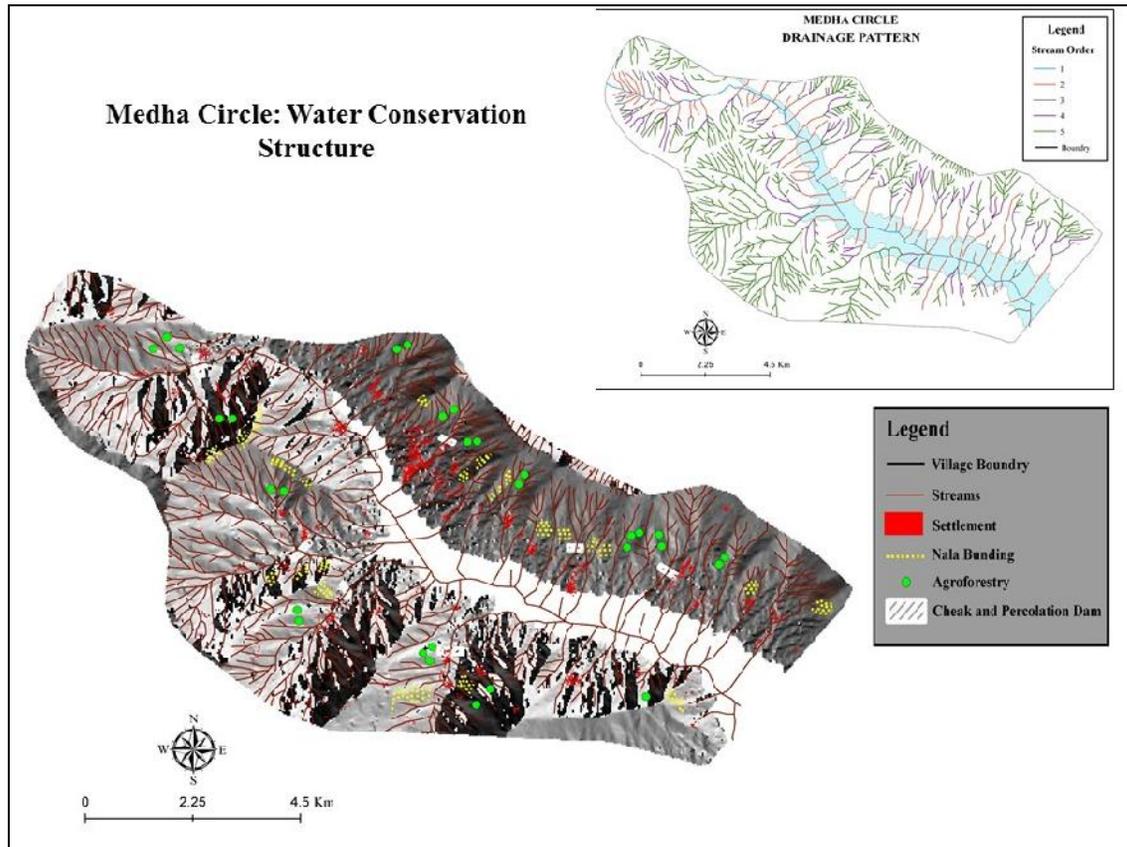
### **RAINWATER CONSERVATION:**

In hard rock or hilly regions of the tahsil, the ground water utilization exceeds the ground water replenishment under normal recharge conditions. The situation arises at many places where sustainable management of ground water has become a challenge in the tehsil. Ground water aquifers in these areas are fast depleting leaving the aquifers. Such areas is increasing, forcing the planners and the development agencies to look for the option of artificial ground water recharge. Rainwater harvesting and artificial recharge of ground water has been advocated and practiced in the hard rock or hilly regions to arrest falling ground water table.

In the rainfed regions, which have ultimate source of surface and ground water resources is the precipitation. It is very essential to carefully handle and store the runoff generated through rainfall in surface and ground water storage structures. The many of centrally sponsored programmes are being implemented with the assistance of Government of India for rainwater harvesting, conservation and recharging the aquifers during the 2012 to 2017 five year plan.

In the Medha circle of the Jawali tehsil, most of the villages are facing the water scarcity problem in the summer season. It is observed that the rain water harvesting has a little scope in lower reaches of river basin. As the distance from the river increases, the availability of water becomes difficult. Basically, in the hilly area this problem is more critical. The circle villages, women and children travel a distance of half to two kilometres

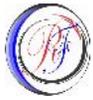
from December to May for fetching drinking water because the ground water depletes and decreases during this period.



In the circle, decrease natural water storage capacity from subsequently reduce long-term water availability for more than one-sixth because of the steep slope of the terrain and the current infrastructure often does not have the capacity to fully capture this larger volume of water, and therefore will not be able to meet water demands in times of drought. Rainwater is to be stored in such way so that underground water level can increase & rate of evaporation can be minimized. Structure of small irrigation schemes are very much advantages because it save the money & time of construction. Recycling waste water after proper treatment, rainwater harvesting, conservation natural wetlands, recharging ground water, watershed management and reduction in water pollution and the reclamation of wasteland should be adopted by testing the soil, land preparation, levelling and bunding, leaching and flushing, green enriching, organic and appropriate irrigation management, bio-scientific management. To improve the groundwater level, check dams and percolation tanks, nala bunding, stone terracing, agroforestry and horticulture is recommended in the study area.

## CONCLUSION:

The demand for water is going on increasing with the increase in population in the Medha circle. So efforts are made to increase recharging of water by various water and soil conservation structures. Rainwater is naturally and freely available source and which is properly utilized by means of water harvesting and recharging techniques. Availability of water for recharge is available for artificial recharge of rainwater. Maintenance programme



for water storage structure should be done regularly like removing silt in the lake, wells and check dams, it will result in increases water storage capacity of above structures and increase ground water table.

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