



A CASE STUDY ON MICRO WATERSHED MANAGEMENT IN DANNI BAKHTA SECTION OF KATHUA

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ABSTRACT

Batuwali khad is the tributary of Ujh River the 2nd most important river of Outer plains of the Jammu division in village Dhanni-Bakhta 25 kms away from the Kathua city. The Coordinates are extended from 32°33'39"N to 32°35'39"N Latitude and 75°23'47"E to 75°27'16"E Longitudes. The present case study focused on microwatershed in Dhanni- Bakhta section. Study observed the water related problems in this Kandi area such as acute shortage of water, deep water levels, seasonal and long term discharges of the springs, water logging, shallow water levels, water quality problems at some places and the declining water levels. These ground water issues and problems are localized and need to be focused.

KEYWORDS : Water Resources, Micro Watershed, Watershed Management, Watershed Characterization, Scarcity of Water.

INTRODUCTION:-

Water is an inexhaustible and valuable natural resource. The existence of the plants and animal kingdoms depends on water. So water is called "LIFE". In most of the villages and towns in India there is a scarcity of water which is due to their location and sometimes due to mercy of nature. This scarcity is also seen in the Kandi regions of J&K where improper fresh water supplies leads to various problem for the people living in the area. As the sub-tropical region of J&K receives rainfall mainly due to South West Monsoon. About 80% of the rainfall occurs in four months by these monsoon winds. So, eight months of the year remains almost dry. As a result, such irregular, unequal and uncertain monsoon rainfall brings natural calamities like floods and droughts have their devastating effect in our country. The present study details about the micro-level study of Dhanni- Bakhta section of District Kathua of J&K. Watershed is an area of land that contains a common set of streams and rivers that all drains into a single larger body of water, such as larger river, a lake, or an ocean. Watershed comes in all shapes and sizes. They cross country, state and national boundaries. Small drainage basin generally contribute to streams, while the water from larger drainage basins come together to form large rivers. Prevalence of the intensive acceleration of hydrological processes and the increased conflicting human interactions with natural resources in terms of land, water and vegetative cover, leads the natural landscape to severe problems in Kandi region of J&K. Some areas of this region, are under the effect of scarcity of water in summers.

As a result many problems are faced by the people who are living in these areas. Therefore, to understand the multi-faceted problems of Kandi region, the watershed of Botuwali Khad which covers Dhanni-Bakhta section of district Kathua has been identified to study the influence of such extreme hydrological conditions on people residing in the area.

STATEMENT OF THE PROBLEM:-

Ujh is the second most important river of outer plains of Jammu region which passes through Kandi region of district Kathua and is known to supplement the most of the demands of settlement in the region. The region has always had lack of and very limited natural water resources and almost completely depends on the river water and rain fall for the daily needs. The scarcity of water, its resources and it's uses propels the investigator to study the existing scnerio. Hereby the investigator has stated the present problem as "A case study on Micro watershed management in Danni Bakhta section of Kathua".

OBJECTIVES:-

- 1.To enlist various types of Water Resources in the Dhanni-Bakhta section of Kathua District.
- 2.To study the adequacy of drinking water.

SIGNIFICANCE OF THE STUDY

For the Government Officials :- Due to lack of technical experts and shortage of Human Resources, there is no attention towards the problems faced by people living in the Kandi regions of J&K. This study will help the Government Officials to develop the water resources of these villages for betterment of the local population residing there.

For the Locals of Kandi Region:- The present study will help the locals of Kandi region to provide a deeper understanding of the programs that are implemented in these villages for the better lifestyles of Human.

An Overview of Dhanni-Bakhta section

The present study was delimited to the Kandi region of J&K. Further the case study was conducted on Dhanni-Bakhta section (A village 25kms from District headquarter Kathua) water needs of which is mostly supplemented by Batuwali khad which is the tributary of Ujh river the 2nd most important river of Outer plains of Jammu division of Jammu and Kashmir. Coordinates are extended from 32°33'39"N to 32°35'39"N Latitude and 75°23'47"E to 75°27'16"E Longitudes. The climate of the area is Semi-arid monsoonal type of climate.

MATERIALS & METHODS

The present case study on Dhanni-Bakhta section a village in the Kandi region the water needs of which is mostly supplemented by Batuwali khad an Ujh tributary, was studied using self observation method, responses collected through questionnaire method, intensive interviews, one to one discussion and group discussion with the local people's. The coordinates of the section are extended from 32°33'39"N to 32°35'39"N Latitude and 75°23'47"E to 75°27'16"E Longitudes.

The Physiographic aspects of the study area is studied by using the survey of India (SOI) topographic map, Topo-sheet No.43p/6 SOI with R.F 1:25,000 was consulted for the preparation of maps related to slope that is slope map, Base map (contour map), drainage map.

Contour Map of the study area:-

A contour is defined as an imaginary line joining adjacent places having same height above mean sea level. The maximum elevation contour in our study area is 1050meters and the minimum elevation contour is 450meters. The contours are closely spaced in North-Eastern side and are apart from each other in the middle of the study area. The map is presented with the contour interval 50m as shown in fig.1

Slope Analysis of the study area:- In the study area, slope of area was calculated by the Wentworth's method, the contour map of study area is divided into grids of 1cm x 1cm. The no. of contours crossing along the edges of grid is counted and then

average no. of contours crossing per grid is computed and some process is applied in the next grid.

Wentworth's method:

Slope angle = $\tan^{-1} N \times I / 0.6336 K$

Where N = number of contour crossing per Km

I = contour interval

K = a numerical unit its value is 1000 for metric unit.

The Map in fig. 2 shows that the slope is maximum i.e., more than 24° in the North Western direction the catchment and the patches of plain areas are seen in many different directions.

**BOTUWALI CATCHMENT
CONTOUR MAP**

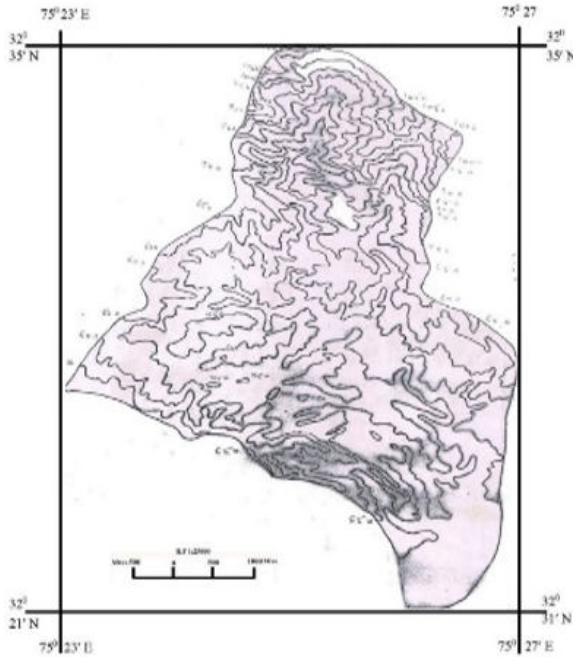


Fig. 1:- Contour Map of Botuwali Catchment.

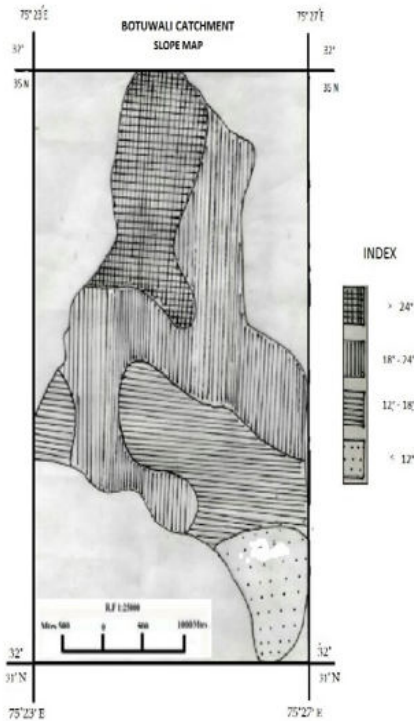


Fig.2 Slope Map of Botuwali Catchment

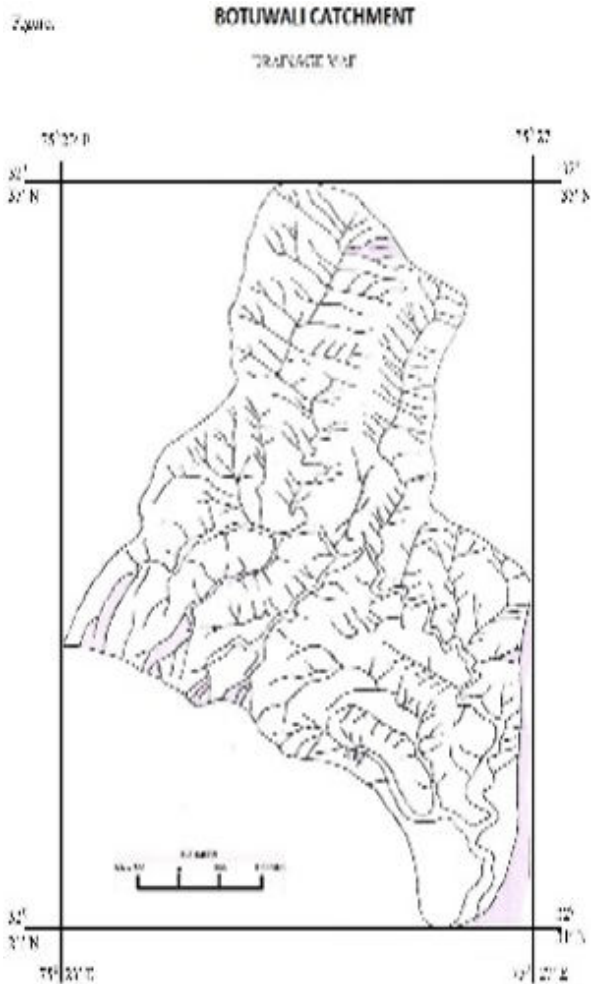


Fig. 3:- Drainage Map of Botuwali Catchment.

Drainage system of the study area:-

Dendritic drainage pattern is shown in the fig. 3. In a dendritic system, there are many contributing streams (analogous to the twigs of a tree), which are then joined together into the tributaries of main river (the branches and the trunk of the tree respectively). They develop where the river channel follows the slope of the terrain.

General and Socio Economic Survey of Dhanni-Bakhta section

Sources of livelihood:-

The inhabitants residing in the area are characterized by the greater dependency on Agriculture, animal rearing like buffaloes and cows. Apiculture is also done in some places.

Drinking Water:- The water sources in the Watershed area are not perennial. So, for drinking water, inhabitants are strictly dependent hand dug wells which are mostly dry in summers, Handpumps, Water supplied by tube wells.

Residential Status (Housing Conditions)

The topography of the Watershed region is primarily hilly all along the basin. However it is more prominent in the upper reaches. The patches of plane areas are few and to be found in isolated spots. Only such places are supporting settlement in the form of hamlets. That is why nowhere one finds the more one, three to five houses together. Both kaccha and Pucca houses are found in the area. Kaccha house is roofed with Tin sheets and Pucca house is flat roofed with Cement, Sand and gravels. For this type home, watershed management technique like top rainwater harvesting technique is to be suggested.

Problems Existing in the area:-

- Poverty
- Low income levels hence low living standards
- Lack of water supplies in summer season
- Silting of existing water resources like ponds, wells
- Insufficient rain water harvesting structure and less awareness cause scarcity of water in summers
- Irregular supply of water.

Ground Water Resources Present in the area:-

a) Hand dug wells:- In the study area the depth of dug well is about 6 or 7 feet. In these dug well the water is the available throughout the year. One more thing is noticed that each and every house digs well and use water for their daily uses. The water drained from these dug wells are either by hand pulling buckets or with the help of motors.

b) Handpump :-

There are some handpumps in the study area which are mostly dry in summers due to low water level in these area. The water comes out from these handpumps have contents of Iron in it.

c) Tube Wells :-

The tube well present in the study area supply water to nearby villages in alternate days.

Surface Water Resources:-**a) Rivers and Streams :-**

The rivers and streams in the study area are mostly dry during summers but except summers inhabitants of these areas use water of these streams with the help of motors.

b) Canal:-

The canal present in the study area is Gravity canal. It is an artificial canal originated from Ujh river and provides irrigation facilities to the agricultural fields lie near to the Ujh river.

CONCLUSIONS:-

Extraction of ground water through dug wells, hand pumps and springs are the major source of water supply to the Dhanni-Bakhta section. But the availability of water during summers is limited particularly in drought period and requires immediate attention to augment these resources. Based on the climatic conditions and Hydrogeology of the area, suitable structures and measures for rain water harvesting and artificial recharge to ground water are required.

Applications of the study:-

1. This study will help the Government Officials and concerned government departments to develop the water resources of these villages for betterment of the local population residing there.
2. The present study will help the locals of Kandi region to provide a deeper understanding of the programs that are implemented in these villages for the betterment of the lifestyle of Humans. In addition the study will help the governments in Micro-watershed management in the rural areas of Kathua especially of Kandi region.

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