International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 09 Issue: 04 | April - 2025 SJIF Rating: 8.586 ISSN: 2582-3930

Watershed Management of Nannaj Village

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I. ABSTRACT

This project focuses on the study and analysis of watershed development in Nannaj village, located in the drought-prone Solapur district of Maharashtra. Due to irregular rainfall and declining groundwater levels, the village has faced severe water scarcity affecting agriculture and daily life. The project explores various watershed management techniques implemented in the area, including check dams, recharge pits, and the Jaltara Project, aimed at improving water availability and soil conservation. It also highlights the importance of community participation and the ecological significance of the region, which houses the endangered Great Indian Bustard. The study emphasizes the role of sustainable water management practices in ensuring long-term environmental and agricultural benefits for the region.

II. INTRODUCTION

Integrated watershed management programme is the strategy adopted in the India for sustainable development of dry land areas and a recent comprehensive assessment of watershed programs in India. Watershed is classified depending upon the size, drainage, shape and land use pattern. The area we are studied covers 8504 Ha. so, it classified under Milli-watershed. It includes three villages namely Nannaj. Many parts of India are facing the water scarcity problem. In their areas the water conservation and management are essential activity. Water conservation means the action taken to reduce water use by improving the efficiency of various uses of water. Solapur district is located in drought prone area of Maharashtra; hence this district is facing drought problem every year. Therefore, need of water conservation and management is essential in Solapur district.

III. OBJECTIVES

1. To study the water resources conservation and management projects adopted in Solapur district.
2. To give suggestion and recommendation for water conservation and management.

VI. PROBLEM IDENTIFICATION

a) Scarce rainfall and less awareness have caused the drought conditions
b) Poverty due to unemployability.
c) All people are dependent only on farming.
d) Low-income levels hence low living standards
e) Lack of water supplies in summer season
f) Farmers adopting tradition method of irrigation
g) Agricultural production in only one season
h) The average rainfall is very less i.e. average annual rainfall of 542.2mm.
i) he rainfall fluctuation is very high
j) Silting of existing water resources like Lake, Wells.
k) Insufficient rainwater harvesting structure.

l) There is significant slope with intense rains resulting in high degree of erosion.

V. BENEFITS OF WATERSHED MANAGEMENT

(i) Maximum productivity increase per unit area.

(ii) Increasein cropping pattern.

(iii) Proper utilization of marginal or waste lands through alternate land use systems.

(iv) Ensuring ecological balance.

(v) Agro based, dairy farming increase which gives employment to local labour.

(vi) Stabilizing income.

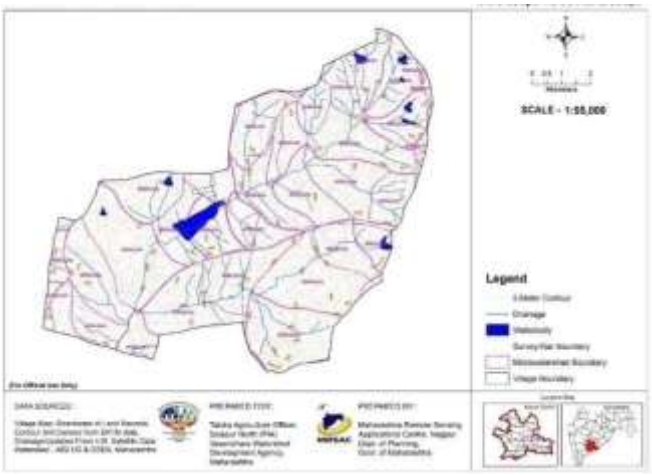
VI. METHODOLOGY

The methodology adopted for the present area includes the collection of data

- By observation and discussion with local people
- By personal interviews of the local people.
- Through Questionnaires prepared and getting filled them by people.
- Through Social Mapping of the areas for developing the social relationship with the local people.
- By GIS Survey including contour map, natural stream line map, water delineation map giving land use details.

VII. STUDY AREA (Nannaj Village)

Nannaj village is located in Solapur North Tehsil of Solapur district in Maharashtra, India. Nannaj located at 17.796028 Latitude and 75.8381345 Longitude. The climate of the villages tropical. During Summer, the humidity level is very high and in winter the climate is almost always dry. The unavailability of water in summer is severe. The total geographical area of village is 3241 hectares. Nannaj has a total population of 7585 peoples. There are about 1540houses in Nannaj village.



Map-1: Map No.1 Watershed Map of IWMP

VIII. BASIC DETAILS OF STUDIED AREA

Watershed development needs basic information about the area like geographical area, population, average rainfall, land under cultivation, Pond and canal, Irrigation facility etc.

Table No.1: Basic details of studied area

	Nannaj
Geographical area	2980.98ha
Population	7585
Average rainfall	542.2mm
Irrigation facility	Bore-well &dug wells, lake

Table No.2: Existing ground water structures in watershed (Tentative Data)

Particulars	**Nannaj**		
	Ponds	**Wells**	**Bore wells**
No. of structures	07	260	400
Use limit	-	Private	Private
Use for drinking purpose	-	Yes	Yes
Use for irrigation purpose	-	Yes	Yes
Availability of water for drinking purpose (approximately)	-	Till Nov- Dec	Till Nov-Dec
Availability of water for irrigation purpose (approximately)	-	Till Jan	Till Feb

Table No.3: Crop pattern of study area

Location / Crop	Nannaj Area for crop Sown
Jawar	317
Wheat	175
Soya Bean	245
Vegetables	150
Orchards	260
Cotton	120
Groundnut	135
Grams	135
Area available for sown (hector)	**1528.04**

IX. RESULT AND DISCUSSION

NANNAJ

Table no 4. Capacity of Proposed Watershed Structure of Nannaj

Sr.no.	Type of structure	No. of structures	Water to be Stored (m3)	Total water Available (m3)
1	LBS	-	12	$6.73x10^5$
2	Earthen Structure	31	17.5	
3	Farm pond	28	876	
4	Earthen Nala Bunding	2	5390.7	
5	Check dam	5	14000	
6	Compartment Bunding	1490.49 Ha	380.625	
Total =$6.73x10^5$ m3 per year				

Table no 5 Cost of Proposed Watershed Structure of Nannaj

Sr.no.	Type of structure	No. of structures	Cost of structure	Total cost in Rs.
1	LBS	-	9150	-
2	Earthen Structure	31	9806	303986
3	Farm pond	28	160000	4480000
4	Earthen Nala Bunding	2	6,01,236	1202472
5	Check dam	5	769000	3845000
6	Compartment Bunding	1490.49 Ha	28047	41803773
Total cost				51635231

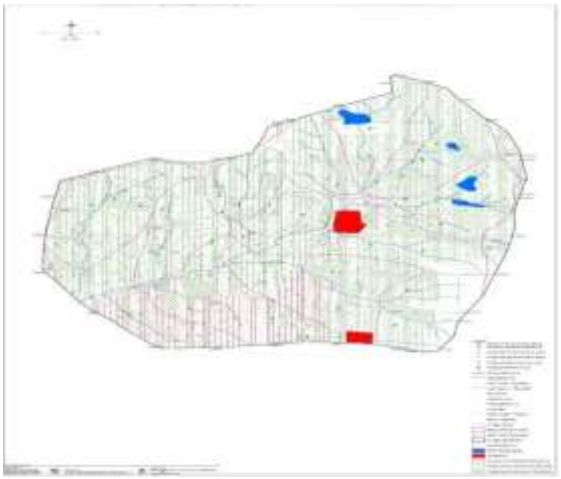
A) Annual Water Requirement for demand of Domestic & Animal

Domestic Requirement = 236490.8cub.m. Animal Requirement=38921.045cub.m Total water requirement=$2.75x10^5$ cub.m.

B) Cost of water per liters

Total Capacity of Proposed watershed structure = 673000000Liters

Total cost of watershed techniques = Rs. 51635231 Cost of water per liters = 51635231/673000000 Cost of water per liters = Rs. 0.076/lit



Map No. 2 Map Showing Existing & Proposed Watershed Structure of Nannaj

X. CONCLUSION

In North Solapur the demand for water is going on increasing with the increase in population. So, efforts are made to increase recharging of water by various water and soil conservation structures.

1) Perennial source of water is not available. If watershed development techniques are implemented, it will result in increase in the living standard and economic condition of people of in these villages.

2) Availability of water for recharge very less. water of total precipitation (542 mm Avg. Precipitation) is available for artificial recharge. It is found that 85 % of this available water can be recharged in watershed area.

3) For watershed development project runoff is very important factor. It is easy to make rise in water table, due to check to the flow of water or runoff. Runoff occur in nallas/streams.

4) Watershed management project can effectively solve problem of drinking water.

5) Various watershed measures like RWH, farm pond, check dam, vanrai bandhara, should be implemented to cope up with the drought conditions.

6) Maintenance programme for water storage structure should be done regularly like removing silt in the lake, wells and check dam it will result in increased water storage capacity of above structures and increase groundwater table.

7) Watershed development project is effective for decreasing demand of water from other resources and becomes self-dependent from water supply point of view.

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