



A

Project Report on

“Watershed Management Techniques at Moraya Chinchore Village”

Submitted to,
Department of Biotechnology,
Government of India.
under
DBT Star College Scheme

Submitted By

Mr. Unwane Sachin Murlidhar
Mr. Darndale Uday Patilba
Mr. Dhere Akash Baburao
Mr. Latpate Rushikesh Ramkisan
Miss. Lande Sakshi
Mr. Tambe Komal Ravsaheb
Mr. Shelar Pratiksha Sanjay

UNDER THE GUIDANCE OF

Mr. Shoukat Z. Fakir

(M.A. NET, SET)

Assistant Professor of Geography

DEPARTMENT OF GEOGRAPHY

Mula Education Society's,
Arts, Commerce and Science College,
Sonai Tal-Newasa Dist. –Ahmednagar.

Year: 2020-21

MULA EDUCATION SOCIETY'S
ARTS, COMMERCE AND SCIENCE COLLEGE,
SONAI, TAL – NEWASA, DIST. – AHMEDNAGAR

CERTIFICATE



This is to certify that the work incorporated in the dissertation entitled

“Watershed Management Techniques at Moraya Chinchore Village”

Submitted by Mr. Unwane, Mr. Darndale, Mr. Dare, Mr. Latpate, Miss. Lande, Miss. Komal and Miss. Pratiksha Shelar Under DBT Scheme, Department of Biotechnology, Government of India is carried out under my supervision and guidance at the Department of Geography, Mula Education Society's, Arts, Commerce and Science college, Sonai, Tal- Newasa Dist. Ahmednagar, during the academic year 2019-2020.

Dr. R.V. Wagh.
(Head)

Mr. S. Z. Fakir
(Guide)

Mr. S. Z. Fakir
(DBT Coordinator)

Principal
Mula Education Society's
Arts, Commerce & Science College
Sonai, Tal. Newasa, Dist. A'Nagar

ACKNOWLEDGEMENT

I feel great pleasure to be grateful to my project guide **Mr. Shoukat Z. Fakir** (Assistant Professor of Geography) for their inspiring guidance, positive criticism, encouragement, helping nature and showing the right path throughout my project work.

I am also thankful to **Dr. Rajesh V. Wagh** , Head Department of Geography, for permitting and providing all the laboratory condition and equipment required for completing this project work.

I am grateful to **Mr. Sharad K. Auti, Mr. Mahesh V. Take** for the help extended me to get the project work completed in time.

I wish to express my sincere thanks to my friends and also non-teaching staff for their kind suggestion, stimulating discussion and co-operation in completing the project successfully.

I deep heartedly wish to thank my parents for their love and blessings.

Project Students,

Mr. Unwane Sachin Murlidhar
Mr. Darndale Uday Patilba
Mr. Dhere Akash Baburao
Mr. Latpate Rushikesh Ramkisan
Miss. Lande Sakshi
Mr. Tambe Komal Ravsaheb
Mr. Shelar Pratiksha Sanjay

DECLARATION

We hereby declare that the work done in this thesis entitled "Watershed Management Techniques at Moraya Chinchore Village" is submitted to Department of Geography, MES, Arts, Commerce and Science College Sonai. This project is completed under the DBT Star College Scheme and the supervision of Dr. R.V. Wagh. The work is original and not submitted in part or full by me or any other to this or any other University.

Project Students

Mr. Unwane Sachin Murlidhar Unwane

Mr. Darndale Uday Patilba Darndale

Mr. Dhere Akash Baburao Dhere A.B.

Mr. Latpate Rushikesh Ramkisan R.R.L.

Miss. Lande Sakshi Sakshi

Miss. Tambe Komal Tambe

Miss. Shelar Pratisha Sanjay Tambe S

“WATERSHED MANGAEMENT TECHNIQUES AT MORAYA CHINCHORE VILLAGE”

INTRODUCTION:

Water is most important element on the earth surface. This water has the both of three states as the solid, liquid and gasses. Water has number of physical and the chemical properties. Water regulates the temperature on the earth surface by the process of the hydrological cycle. Our earth is blue planet because of it is only plant which has the water properties. Earths 71% surface area is covered by the water body. It is a transparent colorless chemical substance with one oxygen atom covalently bonded to two hydrogen atoms. Water is cycled continuously on Earth through evaporation, transpiration, condensation, precipitation, and other means. ... Pathogens in this polluted water can cause waterborne diseases in living beings.

Water (chemical formula H_2O) is an inorganic, transparent, tasteless, odorless, and nearly colorless chemical substance, which is the main constituent of earth's hydrosphere and the fluids of all known living organisms (in which it acts as a solvent. It is vital for all known forms of life, even though it provides no calories or organic nutrients. Its chemical formula H_2O , indicates that each of its molecules contains one oxygen and two hydrogen atoms, connected by covalent bonds. The hydrogen atoms are attached to the oxygen atom at an angle of 104.45° . Water is the name of the liquid state of H_2O at standard conditions for temperature and pressure.

A number of natural states of water exist. It forms precipitation in the form of rain and aerosols in the form of fog. Clouds consist of suspended droplets of

water and ice, its solid state. When finely divided, crystalline ice may precipitate in the form of snow. The gaseous state of water is steam or water vapor.

Water covers approximately 70.9% of the Earth's surface, mostly in seas and oceans. Small portions of water occur as groundwater (1.7%), in the glaciers and the ice caps of Antarctica and Greenland (1.7%), and in the air as vapor, clouds (consisting of ice and liquid water suspended in air), and precipitation (0.001%). Water moves continually circulate.

Water plays an important role in the world economy. Approximately 70% of the freshwater used by humans goes to agriculture. Fishing in salt and fresh water bodies is a major source of food for many parts of the world. Much of the long-distance trade of commodities (such as oil, natural gas, and manufactured products) is transported by boats through seas, rivers, lakes, and canals. Large quantities of water, ice, and steam are used for cooling and heating, in industry and homes. Water is an excellent solvent for a wide variety of substances both mineral and organic; as such it is widely used in industrial processes, and in cooking and washing. Water, ice and snow are also central to many sports and other forms of entertainment, such as swimming, pleasure boating, boat racing, surfing, sport fishing, diving, ice skating and skiing.

HDROLOGICAL CYCLE:

It is natural cycle in which water is circulate by three states as soiled, liquid and gasses. It circulate with the properties of temperature is changes. This process regulates the global temperature. It is useful for both of the biosphere and the atmosphere. Hydrological cycle is also known as the “water cycle”; it is the normal water recycling system on Earth. Due to solar radiation, water evaporates, generally from the sea, lakes, etc. Water also evaporates from plant leaves through the mechanism of transpiration. As the steam rises in the atmosphere, it is being cooled, condensed, and returned to the land and the sea as precipitation.

Precipitation falls on the earth as surface water and shapes the surface, creating thus streams of water that result in lakes and rivers. A part of the water precipitating penetrates the ground and moves downward through the incisions, forming aquifers. Finally, a part of the surface and underground water leads to sea. During this trip, water is converted in all phases: gas, liquid, and solid. As mentioned above, water always changes states between liquid, vapor, and ice, with these processes happening in the blink of an eye and over millions of years. The hydrological cycle is intimately linked with changes in the atmospheric temperature and radiation balance. Warming of the climate system in recent decades is unequivocal, as it is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising of the sea level globally.

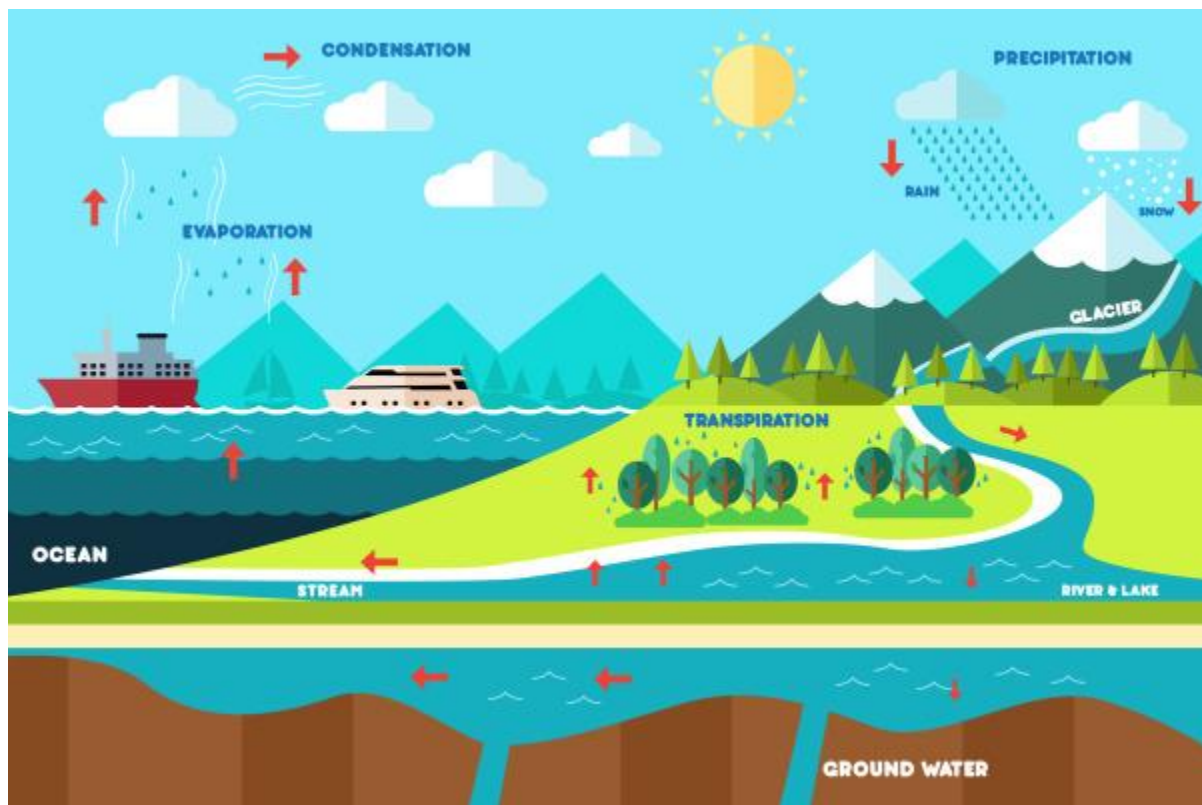


Fig. Hydrological Cycle.

It is expected that the hydrological cycle will be affected from global warming due to the enhanced greenhouse effect . The hydrological cycle may be

strengthened with more precipitation and more evaporation, but the extra precipitation will be unequally distributed around the globe. It is expected that some areas of the world may see significant reductions in precipitation or even more major variations in the timing of wet and dry seasons. Many aspects of the economy, environment, and society are dependent upon water resources, and changes in the hydrological resource base have the potential to severely impact upon environmental quality, economic development, and social well-being. The concept of the hydrological cycle is quite simple. But, its importance to life on earth is profound. The hydrological cycle plays an overarching role in the cycling of solar energy, sediments, and chemical elements vital for life. Although it is clear that contemporary ecosystems reflect an evolutionary adaptation to the delicate linkages that exist among the various components of the hydrological cycle, it is also apparent that evolving life has affected the evolution of the hydrological cycle over geological time. Life, it appears, is simultaneously a product of the hydrological cycle and a factor causing changes in the cycle.

CONCEPT OF WATERSHED:

Watershed is unit of the area, in which water of the upper portion is coming downward direction due the gravity. This watershed area may be small or very big. A watershed is an area of land that drains or “sheds” water into a specific water body. Every body of water has a watershed. Watersheds drain rainfall and snowmelt into streams and rivers. These smaller bodies of water flow into larger ones, including lakes, bays, and oceans. A watershed is an area of land that drains all the streams and rainfall to a common outlet such as the outflow of a reservoir, mouth of a bay, or any point along a stream channel. Watersheds can be as small as a footprint or large enough to encompass all the land that drains water into rivers that drain into Chesapeake Bay, where it enters the Atlantic Ocean. This map

shows one set of watershed boundaries in the continental United States; these are known as National hydrologic units.

The word "watershed" is sometimes used interchangeably with drainage basin or catchment. Ridges and hills that separate two watersheds are called the drainage divide. The watershed consists of surface water--lakes, streams, reservoirs, and wetlands--and all the underlying groundwater. Larger watersheds contain many smaller watersheds. It all depends on the outflow point; all of the land that drains water to the outflow point is the watershed for that outflow location. Watersheds are important because the stream flow and the water quality of a river are affected by things, human-induced or not, happening in the land area "above" the river-outflow point.



WATERSHED MANAGEMENT:

Watershed Management is skill, in which different branches knowledge is applied. Watershed management is the study of the relevant characteristics of a watershed aimed at the sustainable distribution of its resources and the process of

creating and implementing plans, programs and projects to sustain and enhance watershed functions that affect the plant, animal, and human communities within the societies. Water is most important element in many more human activities. In India, the tropical nation it has the monsoon climate. That's why conservation of the water is most necessary. Watershed management is the study of the relevant characteristics of a watershed aimed at the sustainable distribution of its resources and the process of creating and implementing plans, programs and projects to sustain and enhance watershed functions that affect the plant, animal, and human communities within the watershed boundary.^[1] Features of a watershed that agencies seek to manage to include water supply, water quality, drainage, storm water runoff, water rights and the overall planning and utilization of watersheds. Landowners, land use agencies, storm water management experts, environmental specialists, water use surveyors and communities all play an integral part in watershed management. In agricultural systems, common practices include the use of buffer strips, grassed waterways, the re-establishment of wetlands, and forms of sustainable agriculture practices such as conservation tillage, crop rotation and inter-cropping. After certain practices are installed, it is important to continuously monitor these systems to ensure that they are working properly in terms of improving environmental quality.

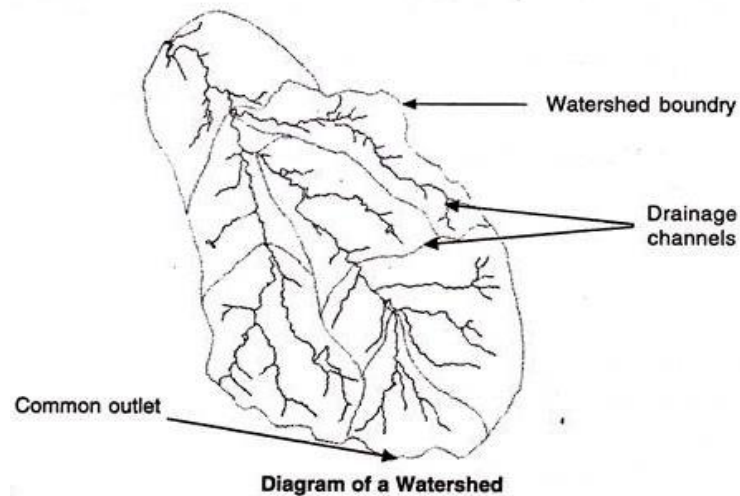
In urban settings, managing areas to prevent soil loss and control storm water flow are a few of the areas that receive attention. A few practices that are used to manage storm water before it reaches a channel are retention ponds, filtering systems and wetlands. It is important that storm-water is given an opportunity to infiltrate so that the soil and vegetation can act as a "filter" before the water reaches nearby streams or lakes. In the case of soil erosion prevention, a few common practices include the use of silt fences, landscape fabric with grass seed and hydro seeding. The main objective in all cases is to slow water movement

to prevent soil transport. Environmental laws often dictate the planning and actions that agencies take to manage watersheds. Some laws require that planning be done, others can be used to make a plan legally enforceable and others set out the ground rules for what can and cannot be done in development and planning. Most countries and states have their own laws regarding watershed management.

Those concerned about aquatic habitat protection have a right to participate in the laws and planning processes that affect aquatic habitats. By having a clear understanding of whom to speak to and how to present the case for keeping our waterways clean a member of the public can become an effective watershed protection advocate. Water resource management is the activity of planning, developing, distributing and managing the optimum use of water resources. It is an aspect of water cycle management.

Water is essential for our survival. The field of water resources management will have to continue to adapt to the current and future issues facing the allocation of water. With the growing uncertainties of global climate change and the long-term impacts of management actions, the decision-making will be even more difficult. It is likely that ongoing climate change will lead to situations that have not been encountered. As a result, alternative management strategies are sought for in order to avoid setbacks in the allocation of water resources.

The word “watershed” introduced in 1920 was used for the “water parting boundaries”. Watershed is that land area which drains or contributes runoff to a common outlet. Watershed is defined as a geo-hydrological unit draining to a common point by a system of drains. All lands on earth are part of one watershed or other. Watershed is thus the land and water area, which contributes runoff to a common point.



IMPORTANT OF WATERSHED MANAGEMENT: Watershed is an area of land that feeds all the water running under it and draining off it into a body of water in this condition upper landform water is coming downward direction. Watershed Management refers to the management and conservation of surface and groundwater resources, which includes conservation, regeneration and judicious use of all resources.

In many cities across the world, rapid urbanization and the population's growth have led to scarcity and rising cost of water. Scientists predict that water demand will exceed supply by 40 % by 2030, due to combined climate change and population growth. Achieving universal access to improved water supply and sanitation facilities by 2030 in one of Sustainable Development Goals SG (SDGs)

Watershed Management is an adaptive, comprehensive, integrated multi-resource management planning process that seeks to balance healthy, ecological, economic and cultural/social conditions, within a watershed. It serves to integrate the planning of land and water.

- It recharges the groundwater table.

- Restores soil fertility and helps in soil conservation
- Restores water for drinking and other human purposes.
- It helps to fight climate change and promotes sustainable agriculture.
- Protects biodiversity of a region, if managed properly can restore biodiversity.

The Central or State government will recognize the regions for the need for watershed management under, “Pradhan Mantri Kristi Sinchai Yojana”, which will be work under the Ministry of Rural Development.

It is a central scheme, aims at providing irrigation facilities at every village, in a country by converging on-going irrigation schemes.

The visions of extending the converge of irrigation facilities at every village, in a country by converge irrigation “ Har khet Ko Paani ” and improving water use of efficiency, “More Crop Per Drop” in a focused manner.

It will concentrate on two important things.

1. It should quickly put to use 20-40 million of unutilized irrigation potential created in a major, medium & minor irrigation projects.
2. It should provide better quality power rations to farmers during the time of peak irrigation demands.

Example: “Neeranchal National Watershed Project” is one of the irrigation schemes for the watershed compared of the “Pradhan Mantri Kristi Sinchai Yojana “(PMKSY) In India watershed is most necessary because of the tropical climatic condition. Now a day there are number of project are run on the basis of watershed management activity.

VILLAGE MORECHINCHORE:

Village More chinchore is located in the Newasa taluka. Total population of this village is 2500 people. Mostly people are working in the agricultural activity. There is the mountain located toward the west direction. In the monsoon period it gains the rainfall. By the activity of the watershed management, this water is useful for the agriculture and other activity. Watersheds are physical regions from which all arriving water flows to a single exit point. The shared hydrology means that other biophysical systems are linked, typically with upper-gradient regions influencing lower-gradient ones. This situation frames the challenge of managing economic and other uses of watersheds both in terms of individual activities and their influence on other connected processes and activities. Economics provides concepts and methods that help managers with decision making in the complex physical, biological, and institutional environment of a watershed. Among the important concepts and methods that help characterize watershed processes are externalities, impacts of economic activity that fall upon individuals not party to the activity, and third parties, individuals impacted without consent. Public goods and common pool resources describe categories of things or processes that by their nature are not amenable to regular market transactions. Their regulation requires special consideration and alternative approaches for development of good network of markets. Benefit-cost analysis and valuation are related methods that provide a means to compare alternative uses of the same system. Each is based on the normative argument that the best use provides the greatest net benefits to society. And intergenerational equity is a value orientation that argues for preservation of watershed processes for the benefit of future generations. The need for effective watershed management methods pushed 20th century economists to adapt their discipline to the complexity of watersheds, from which emerged sub disciplines of natural resource economics, environmental economics, and

ecological economics. The field is still evolving with a growing interest in data gathering through land-based low-cost data collection systems and remote sensing, and in emerging data analysis techniques to improve management decisions.

WATERSHED MANAGEMENT ACTIVITY IN MORE CHINCHORE VILLAGE:

More chinchore village has the highland area; it does not connected with Mula dam area. Due to the dry land farming of this people, economic condition of this farmer was backword. Yashwant Samajik Pratishtahan has made the watershed management activity. It had made the good irrigation network. It had made good irrigation in the agriculture activity

DRAWBACK OF THE WATERSHED MANAGEMENT:

watershed is not always good for development but it has some economic and social drawback as below-

- Open and shallow rainwater ponds and dams may dry out after the rainy seasons, as the water is lost via seepage (except for rock catchment and sand dams) and evaporation
- Health risks: open storage structures can be contaminated by animals and can provide a breeding ground for disease-carrying insects. Sand dams are often contaminated as they are seldom protected from animals
- Sometime this water shed project becomes the hazardous for civil area and environment also.
- In the major dam area, forest area goes under the water body.
- Road and transportation network is disturbs.

References:

- Abbast S.A. (2001): "Water resource Projects and their environment impact". Himalaya publishing house, New Delhi.
- Biswas Asit K. (1993): "Water for sustainable development in 21st century – A Global perspective Oxford publisher, Delhi.
- Banil P.C. (1993): "Water Management in India", Anmol Publishing, New Delhi. Pp 32- 37
- Chaturvedi M.C. (1987): "Water resources systems planning and management", Tata McGraw Publishing Co. Ltd., New Delhi.
- Grigg Nell's (1985): "Water Resources Planning", McGraw Hill Book company, Washington.
- Mathhews Olen, Paul (1987): "Water resources Geography and Law." Scientific publisher, Jodhpur.
- Mishra H.N. & Singh Vijai P. (1998): "Research Methodology in Geography", Rawat Publication, Jaipur.
- Mishra R.P. & A. Ramesh (1984): "Resource Geography", Heritage Publisher, New Delhi.
- Rao K.S. (1992): "Fresh Water Ecology", Anmol Publication, New Delhi.
- Sen & Das P.K. (1986): "Water utilization of Form level", National Institute of Rural development, Hydrabad.
- Sharma V.K. (1989): "Water Resources & Water management", Himalaya Publishing Bombay.

- Singh R.B. (1996): “Research in Geography”, Vol. II, APH Publishing corporation, New Delhi.
