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(WATERSHED PLANNING AND MANAGEMENT)

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Learning Objectives

1. What is watershed?
2. Concept
4. Objectives



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What is Watershed?

A watershed is a basin-like landform defined by highpoints and ridge lines that descend into lower elevations and stream valleys.

In other words, a watershed describes an area of land that contains a common set of streams and rivers that all drain into a single larger body of water, such as a larger river, a lake or an ocean.

A watershed or catchment is defined as any surface (varying from a few hectares to several thousand square kilometers) in which rainfall is collected and conveyed to a common natural waterway.

"Watershed is a geo-hydrological unit draining run-off water at a common point and it could be demarcated based on ridge and gully lines"



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HOW WATERSHEDS WORK





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Concept of Watershed

Watershed constantly undergoes the action reaction of many Hydrologic and Hydraulic Components or Phenomena.

Hydrologic → Precipitation, Infiltration, Evaporation, Evapotranspiration

Hydraulic Components or Phenomena → Flow, Erosion, Sedimentation, Land slides, Water Scarcity, Water Quality Degradation



Classification of Watershed

The watershed are classified into a number of classes depending on the classification mode. In general , the watershed classification are based on the following parameters :

The size

The shape

The land use pattern

Slope of land

Climate

Soil



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Watershed classification Based on size

Macro watershed ($> 50,000$ ha)

Sub-watershed (10,000 to 50,000 ha)

Milli-watershed (1000 to 10000 ha)

Micro watershed (100 to 1000 ha)

Mini watershed (1-100 ha)



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Watershed classification based on shape

Hydrologically, the shape of watershed is very important because it controls the time for runoff to concentrate at the outlet, i.e. the time of concentration; and thus affecting the watershed's hydrological behaviour. The most common shapes are:

1. Fan shape
2. Fern shape

The fan shape watersheds are normally in circular shape ; and fern shape watersheds are in elongated form.



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Watershed Classification Based on Soil
These are mentioned as below:

1. Red soil watershed
2. Black soil watershed

Watershed Classification Based on Slope of land

1. Hilly watershed
2. Flat watershed

Watershed Classification Based on Climate

1. Humid watershed
2. Arid watershed

Watershed Classification Based on land use pattern

Highland watersheds

Settled cultivation watershed

Tribe settlement watersheds



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Watershed Management

“Watershed management is a concept which recognizes the judicious management of three basic resources of soil, water and vegetation for achieving particular objective for the well being of plant, animal, and human communities within a watershed boundary”



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Objectives

1. Optimum utilization of natural resources such as water, land, and vegetation, etc.
2. Employment facility
3. Efficient and equal distribution of resources
4. Community's living standard, food security, poverty alleviation, hygiene, etc. of the community
5. Unity, Integrity and harmony among villagers
6. Yield of Crop
7. Restoration of desert area
8. Maintenance of water table
9. Reclamation of wasteland
10. Recreation and Fishery Development



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Cont..

11. Water Harvesting
12. Water use control and conservation
13. Growing Greenery
14. Soil Erosion Control
15. Overall development of the community and watershed