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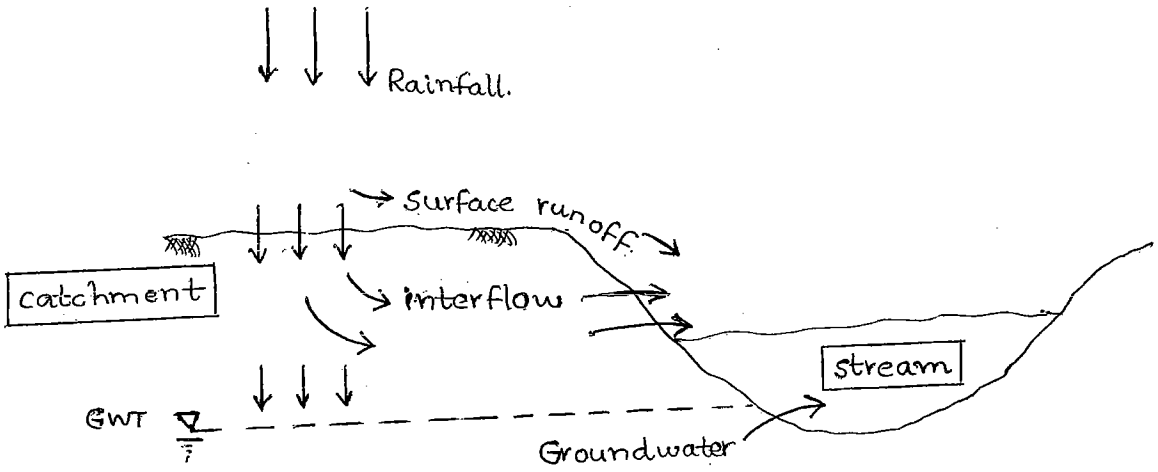
06. RUNOFF

Run off is that portion of a rain which ultimately joins streams and rivers.

- It is an output produced by the catchment for a given input rainfall.

→ Components of Runoff

1. Surface Runoff (Overland Flow)
2. Subsurface Runoff (Interflow)
3. Groundwater



* Based on time delay in joining the runoff into stream:

(i) Direct Runoff.

Runoff without much delay in joining the stream.

(ii) Base flow

Runoff which take its own time; ie late joining run off.

- Direct Runoff includes:

  a) Surface Runoff

  b) Prompt Interflow.

  c) Channel Precipitation.

- Base Flow Includes:

  a) Delayed interflow.

  b) Groundwater flow.

→ Classification of Streams:

- Based on availability of flow in stream:-

  (i) Perennial Streams

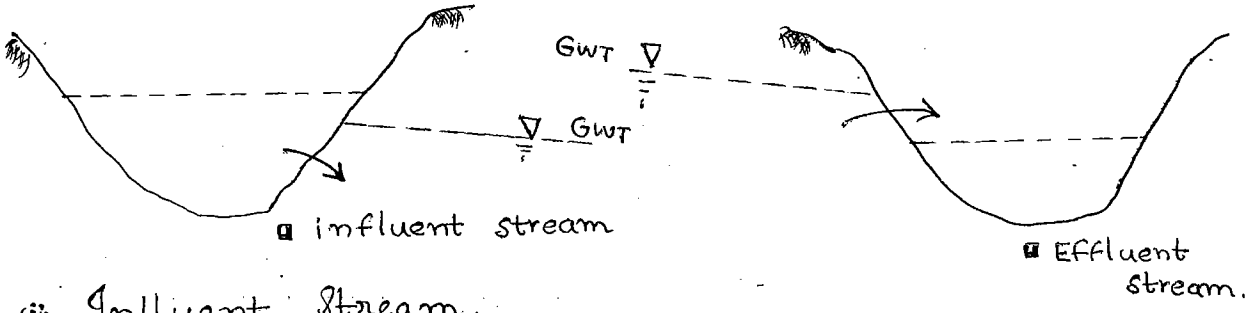
  (ii) Non perennial Streams.

  (iii) Ephemeral Streams (short-lived (or) temporary streams)

- Based on contribution of ground to stream (or) stream to ground.

(i) Effluent Stream.

When ground contribute flow to stream.

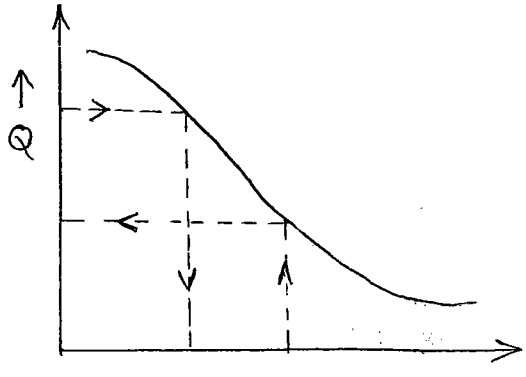


(ii) Influent Stream.

When stream contribute flow to groundwater.

* Flow Duration Curve.

x axis: % times flow equals (or) exceeds.



→ Methods to Estimate Run off

1. Rainfall & Runoff relation (regression analysis)
2. Emperical Procedures.

   Eg :- Binnies Percentages - used for catchments in Vidarbha & MP.

   Barlow's Tables - for catchments in UP.

   Strange Tables - for catchments in Karnataka & Maharashtra.

3. Watershed Simulation

$$R = P - E - T - ET - I$$

4. Horton's Infiltration Capacity Curves
5. Infiltration Indices.
6. Hydrographs.