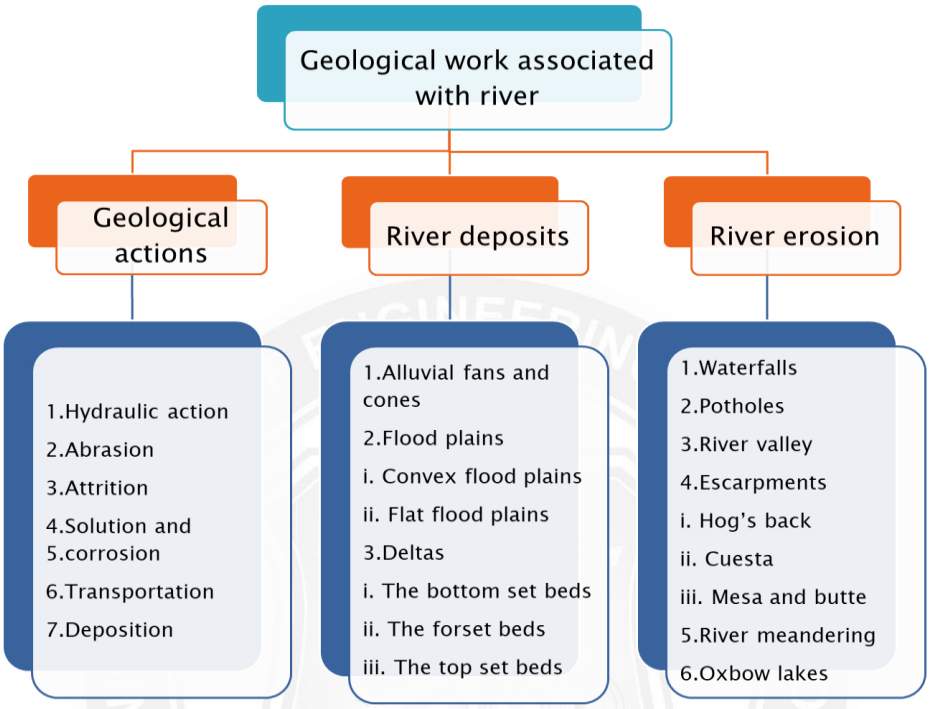
1.2 GEOLOGICAL WORK ASSOCIATED WITH FLUVIAL



Geological work associated with fluvial:

Geological Actions:-

1. Hydraulic action
2. Abrasion
3. Attrition
4. Solution and Corrosion
5. Transportation
6. Deposition

Hydraulic action:-

Hydraulic action of the river is defined as the process of breaking down of rock masses due to the continuous impact of water moving with appreciable velocity along the channel.

- It is the mechanical removal of material by running water
- High velocity is greater removal of grains from rock

Abrasion:-

- The large boulders and pebbles formed due to the hydraulic action of river roll down, along valley. This mechanical breaking down of bed rocks, due to the impact of wear and tear is known as abrasion.

Attrition:-

- The process of mechanical weathering breaking down of the transported rock fragments, due to the impacts of mutual collusion b/n themselves is described as attrition

Solution and Corrosion:-

- Soluble limestone attacked by running water it makes dilute acids and it is a good solvent of rocks. It makes corrosive effects on rock producing further wear and tear effects.

Transportation:-

- The total quantity of rock waste transported by a stream, in suspension, saltation and solution, constitutes it loads.

Deposition:-

- The velocity of running water decreases transporting capacity of the stream is proportionally reduced. The larger fragments are deposited, while smaller particles are transported to a greater distance.

River Deposits:-

1. **Alluvial fans and cones:-**

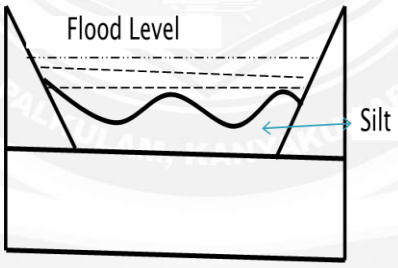
Where the stream enter into plains, the transported sediment like pebbles, gravels, etc deposited at low lands. The rock fragments are arranged like fan like pattern is called alluvial fans.


2. Flood plains:-

Whenever the velocity of river is checked most of the load carried by flood water will be deposited as a thick layer of mud. This deposits are generally plain in nature and hence they are called as flood plains.

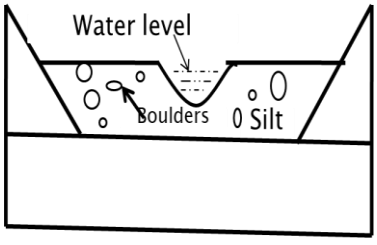
Two types:-

- ✓ Convex flood plains:-



The flood deposit consist mostly of finest sand, silt and clay

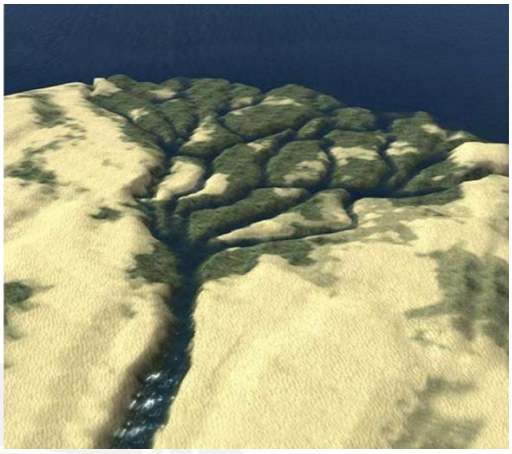
- ✓ Flat flood plains:-



Deposits are made up boulders sand and silt of all grades

3. Delta:-

Deltas are defined as alluvial deposits of roughly triangular shape that are deposited by the rivers at the plains where they enter into the sea.

- **The bottom set beds:-**

It is formed at the base of delta by a gentle sea ward inclination.

- **The forset beds:-**

It shows very steep inclination, towards sea and made up of thick layers of sand and clay.

- **The top set beds:-**

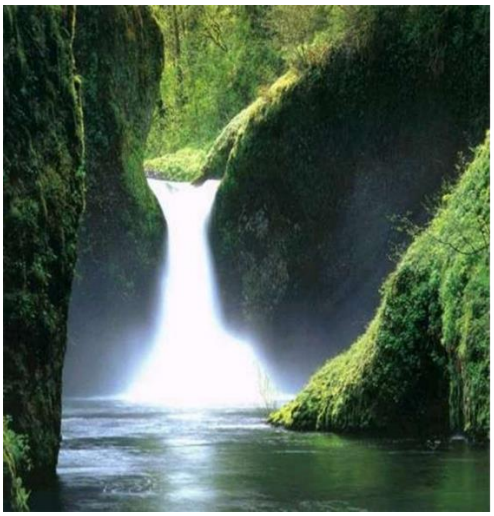
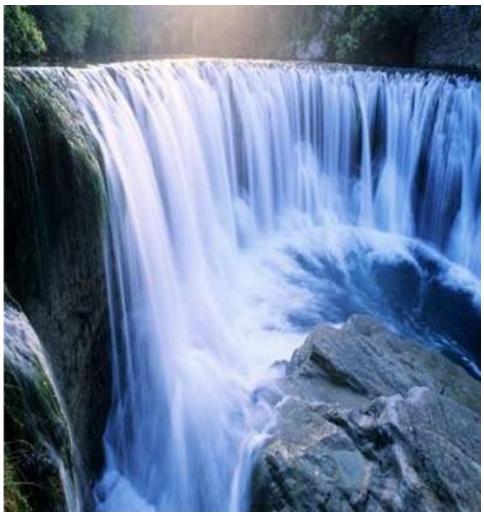
It is a thin layer with gentle slope.

River Erosion

Landforms / Features of river erosion:-

1. **Water falls:-**

When a river flows steep slope, over a vertical slope rock face, it forms a water falls.

2. Pot holes

These are bowl shaped depression, formed due to plucking out of soft rock from river bed by hydraulic action.

- Depression of soft rock are called pot holes.
- Ranges from few centimeters to meters.

3. River Valley

A valley is defined as low land surrounded on sides by various inclined hill slopes and mountains.

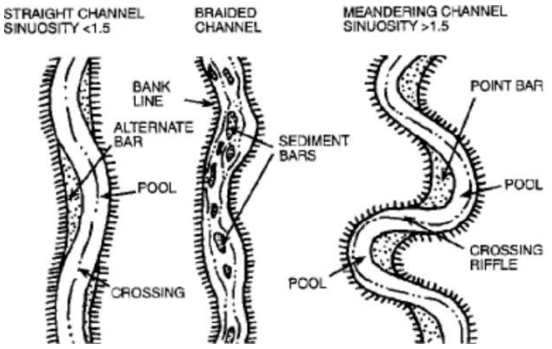
4. Escarpments

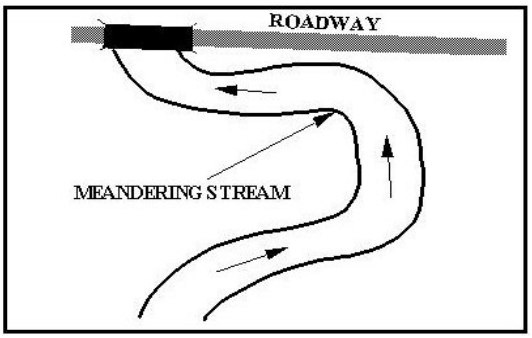
During the river erosion, soft rocks are eroded much faster than hard rocks, leaving behind steep slopes on one side and gentle slope on the other. The side with steep is known as escarpments

5. River Meandering:

When a stream flows an along a curved zigzag path, forming loop shaped course in meandering. The process of development of zigzag course by stream is known as River meandering.

- Moderate flow strength
- Low/moderate bank erodability
- Low/moderate sediment supply
- Meanders move downstream





Development of Meandering

The Oxbow lakes:-

There isolate curved or loop shaped parts of a meandering stream often contain some supplies of water called as oxes lakes.