



**UPPER REACHES:** In the **upper course** channel is narrower & shallower. Such a configuration of channel is a result of lower discharge because of lesser number of tributaries joining river in upper reaches as a result water availability is less.

Availability of bedload → coarser → cobbles and pebbles → more turbulent flow it is required to carry the load → therefore, narrow & shallow channels make the channel turbulent.

**MIDDLE REACHES:** In the middle course both the depth as well as width of channel increases and it acquires a more semi-circular configuration.

This is because:-

- a) Discharge has increased because more tributaries have joined.
- b) Load has also increased with the joining of tributaries.

Presence of semi-circular channel accounts for fast flow of the river.

**LOWER REACHES:** In the lower course the width of channel significantly increases with almost no change in depth with respect to middle course.

This is the mainly because:-

- a) Discharge has increased due to joining of more tributaries.
- b) Vertical erosion is minimal because the river is already at the base level as a result depth does not change.
- c) Deposition is dominant.

## LONG PROFILE or LONGITUDINAL PROFILE:

**Diagram:**

Long profile is a graph showing the long section of the course of a river drawn along the channel Thalweg from source to its mouth:

**Diagram:**

The long profile graph is expressed as a smooth curve that rises upstream. The concavity results from the fact that there is less erosion in the upper and the lower courses of river while maximum erosion occurs in the middle course.

Diagram – ideal curves of long profile or longitudinal profile

**Curve present:-**