

20.1 Slope Area Method

Slope area method is used for estimating the flood discharge.

Assumptions made are

- (i) High Flood Level (HFL) mark is known.
- (ii) Total area is effective in transporting the flow.
- (iii) No water falls.
- (iv) Long reach.

Also the slope-area approach is justified if the change in conveyance in the reach is less than 30 percent.

Although a straight, uniform reach is preferred, a contracting reach should be chosen over an expanding reach if there is a choice.

One or more of the following criteria should be met in determining the reach length:

- (a) The length should be greater than or equal to 75 times the mean depth of flow,
- (b) The fall of the water surface should be equal to or greater than the velocity head, (If

velocity = 1 m/s, $\frac{V^2}{2g} = 0.05$ m and if the velocity = 2 m/s, $\frac{V^2}{2g} = 0.20$ m) and,

- (c) The fall should be equal to or greater than 0.15 m.

When the reach is contracting ($\bar{V}_u < \bar{V}_d$), $k=1.0$. When the reach is expanding

($\bar{V}_u > \bar{V}_d$), $k=0.5$. The 50% decrease in the value of k for an expanding reach is

customarily assumed for the recovery of the velocity head due to the expansion of the flow.