

Preview Chapter 7, Section B for a discussion of calculating effective discharge. This computation should be performed by a professional with a good background in hydrology, hydraulics, and sediment transport.

Floodplain

The floor of most stream valleys is relatively flat. This is because over time the stream moves back and forth across the valley floor in a process called lateral migration. In addition, periodic flooding causes sediments to move longitudinally and to be deposited on the valley floor near the channel. These two processes continually modify the floodplain.

Through time the channel reworks the entire valley floor. As the channel migrates, it maintains the same average size and shape if conditions upstream remain constant and the channel stays in equilibrium.

Two types of floodplains may be defined (**Figure 1.20**):

- *Hydrologic floodplain*, the land adjacent to the baseflow channel residing below bankfull elevation. It is inundated about two years out of three. Not every stream corridor has a hydrologic floodplain.
- *Topographic floodplain*, the land adjacent to the channel including the hydrologic floodplain and other lands up to an elevation based on

the elevation reached by a flood peak of a given frequency (for example, the 100-year floodplain).

Professionals involved with flooding issues define the boundaries of a floodplain in terms of flood frequencies. Thus, 100-year and 500-year floodplains are commonly used in the development of planning and regulation standards.

Flood Storage

The floodplain provides temporary storage space for floodwaters and sediment produced by the watershed. This attribute serves to add to the *lag time* of a flood—the time between the middle of the rainfall event and the runoff peak.

If a stream's capacity for moving water and sediment is diminished, or if the sediment loads produced from the watershed become too great for the stream to transport, flooding will occur more frequently and the valley floor will begin to fill. Valley filling results in the temporary storage of sediment produced by the watershed.

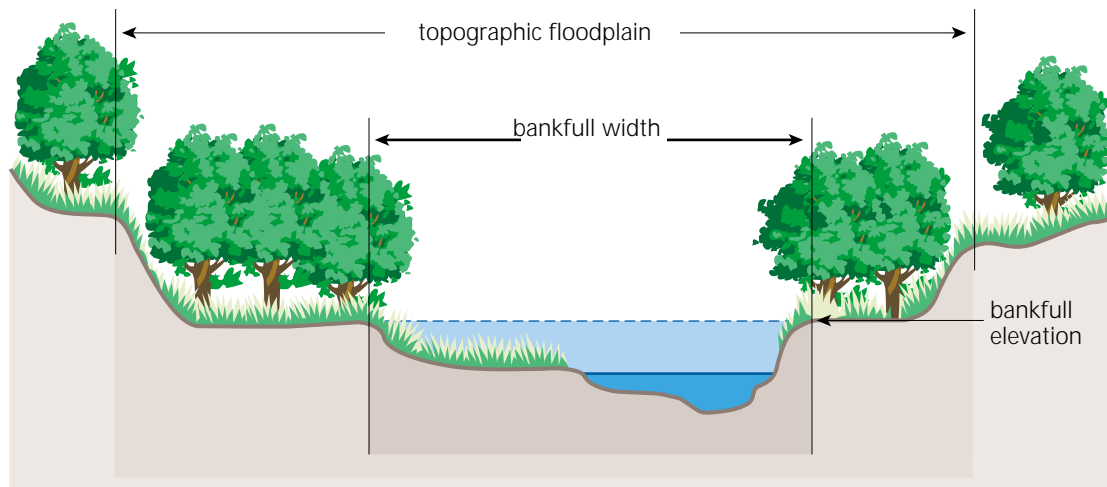


Figure 1.20: Hydrologic and topographic floodplains. The hydrologic floodplain is defined by bankfull elevation. The topographic floodplain includes the hydrologic floodplain and other lands up to a defined elevation.