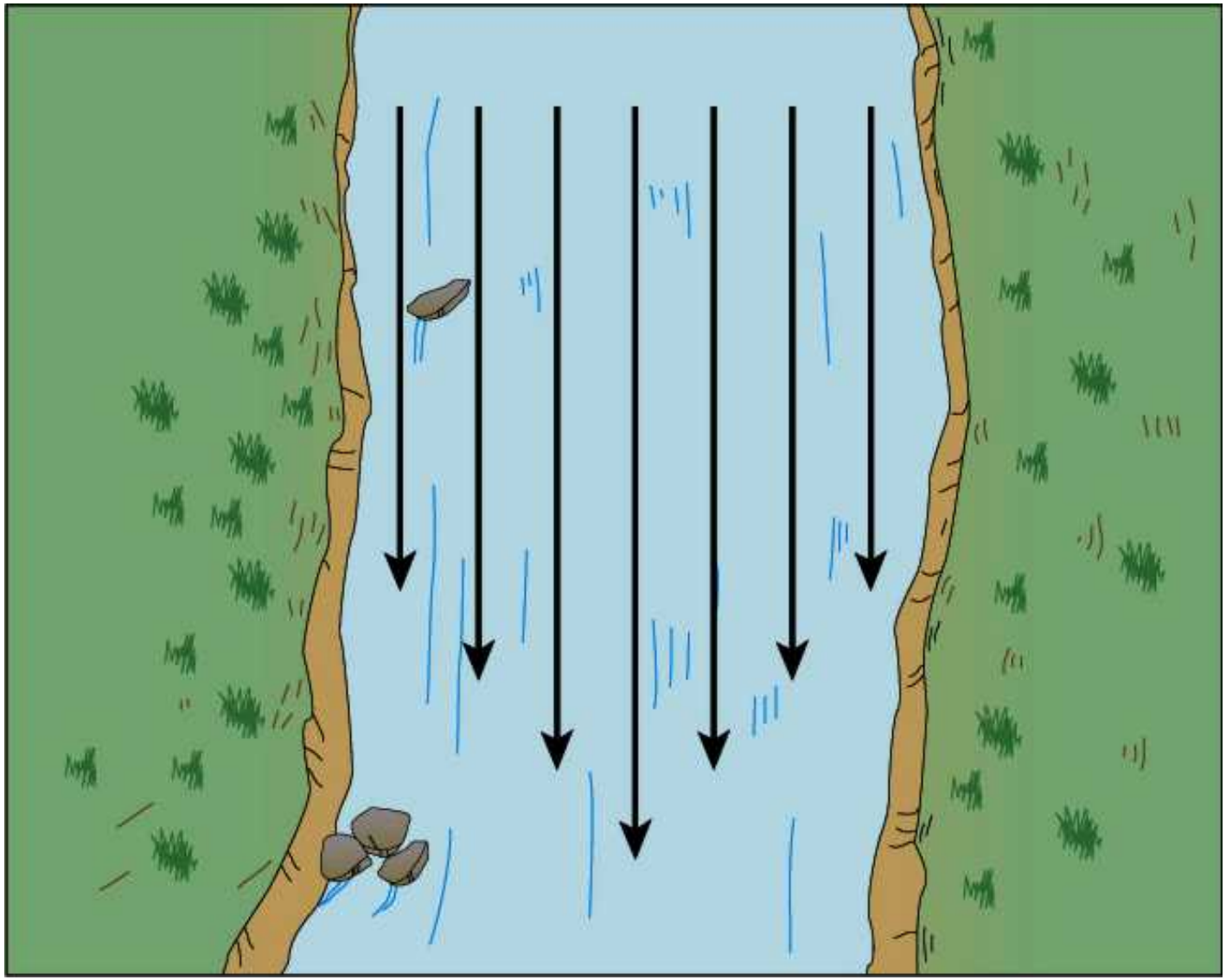
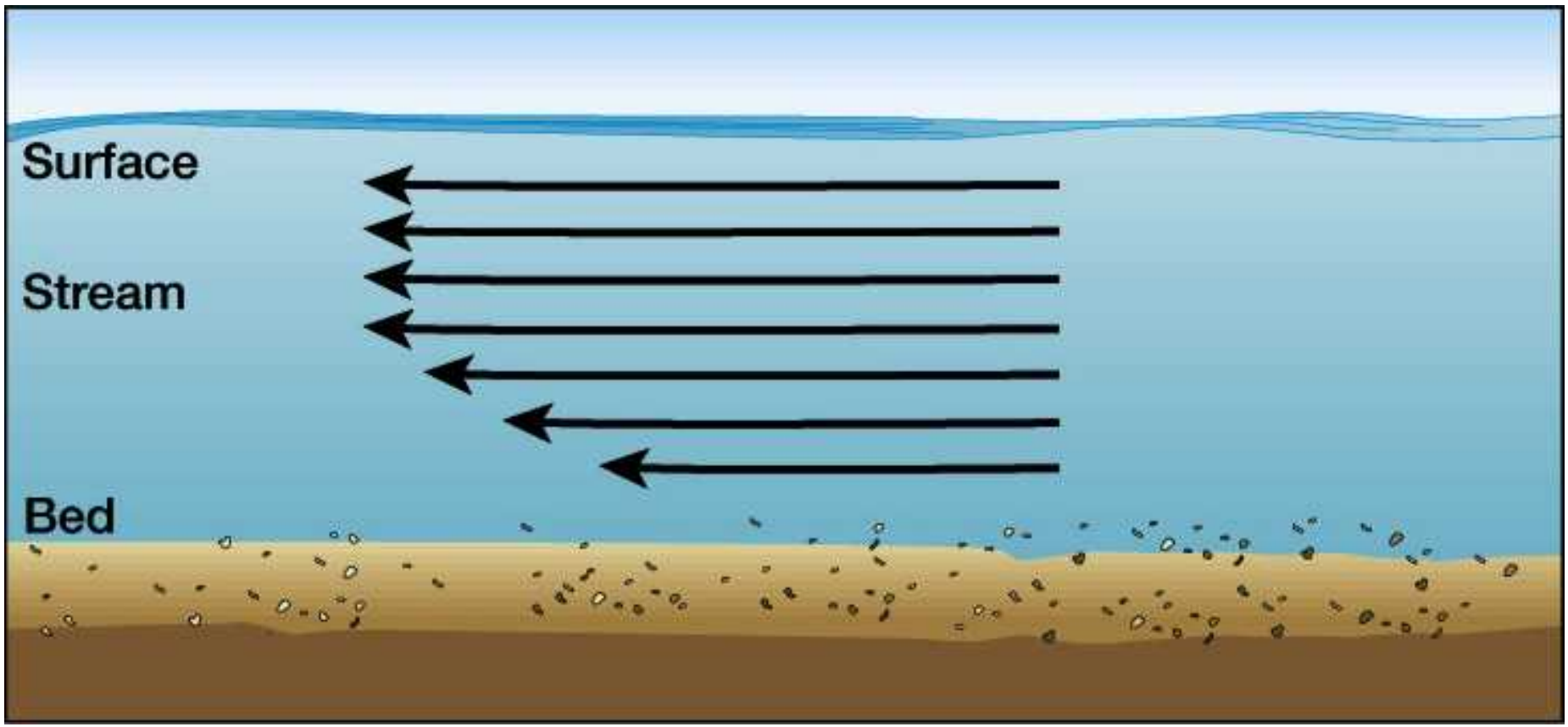
Velocity across a stream

For straight sections, fastest in the center



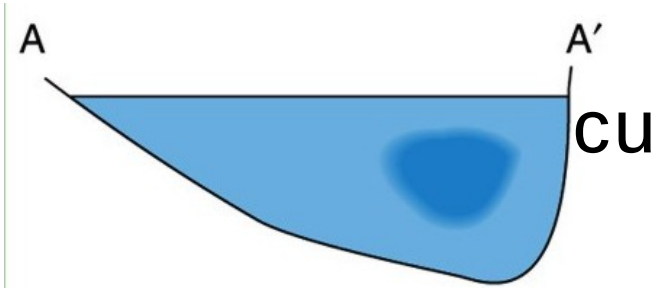
Vertical velocity profile

Fastest flow just below the water surface

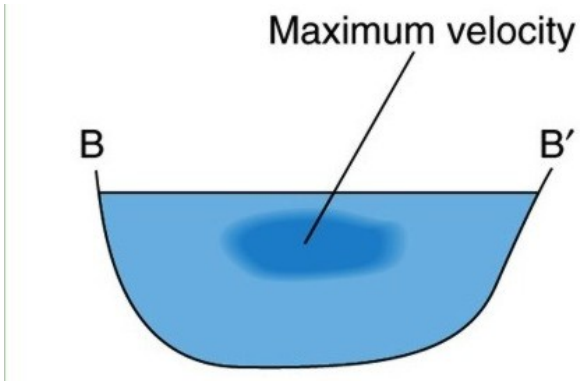


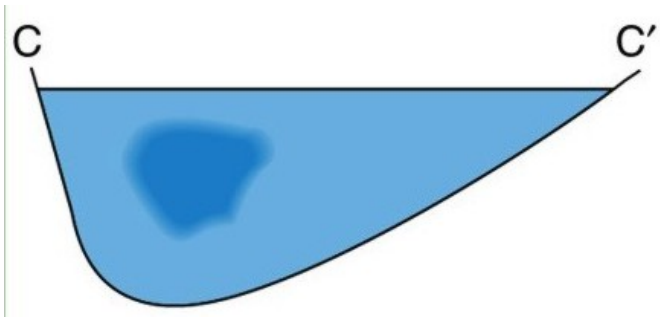
River flow cross sections

point bar



cut bank





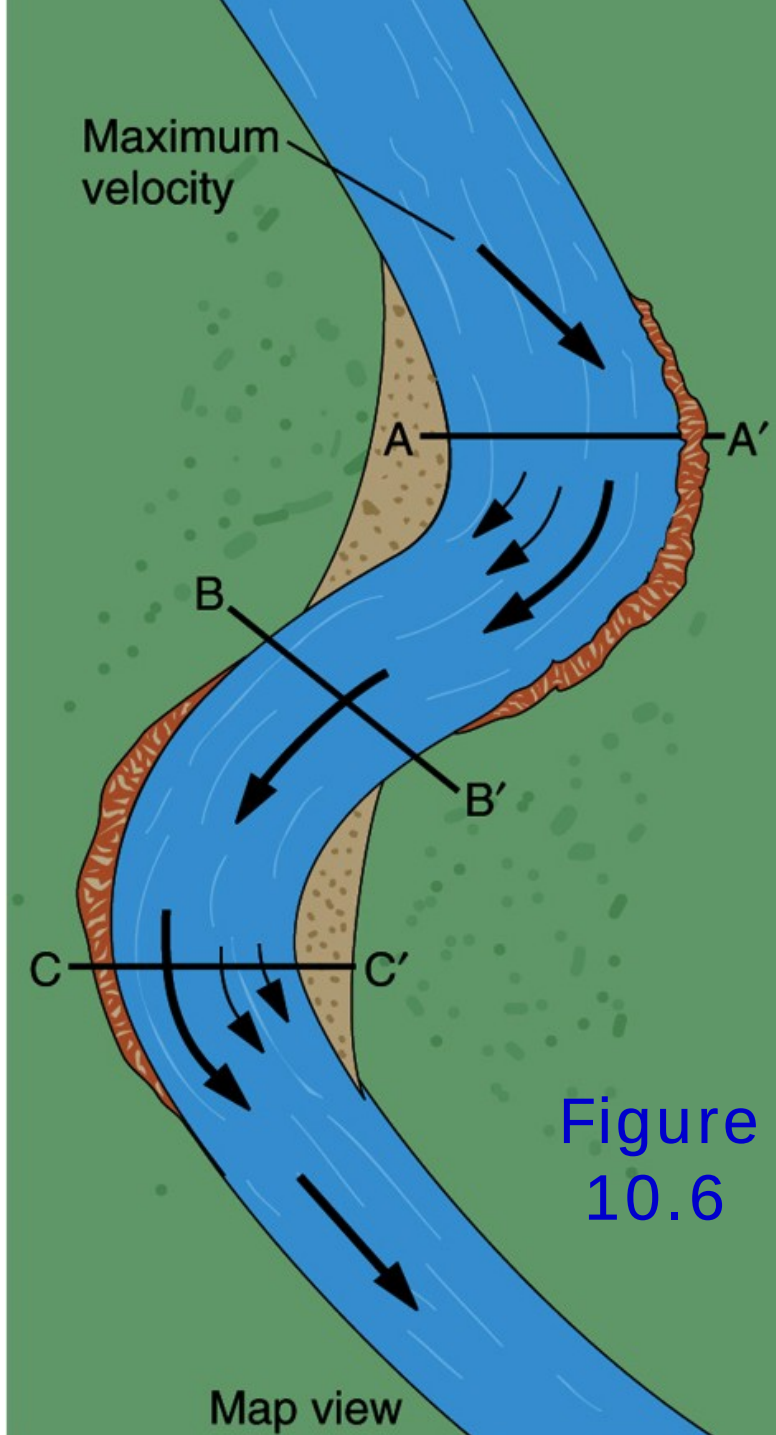


Figure 10.6

Modes of transport

Bedload versus suspended load
also, dissolved load

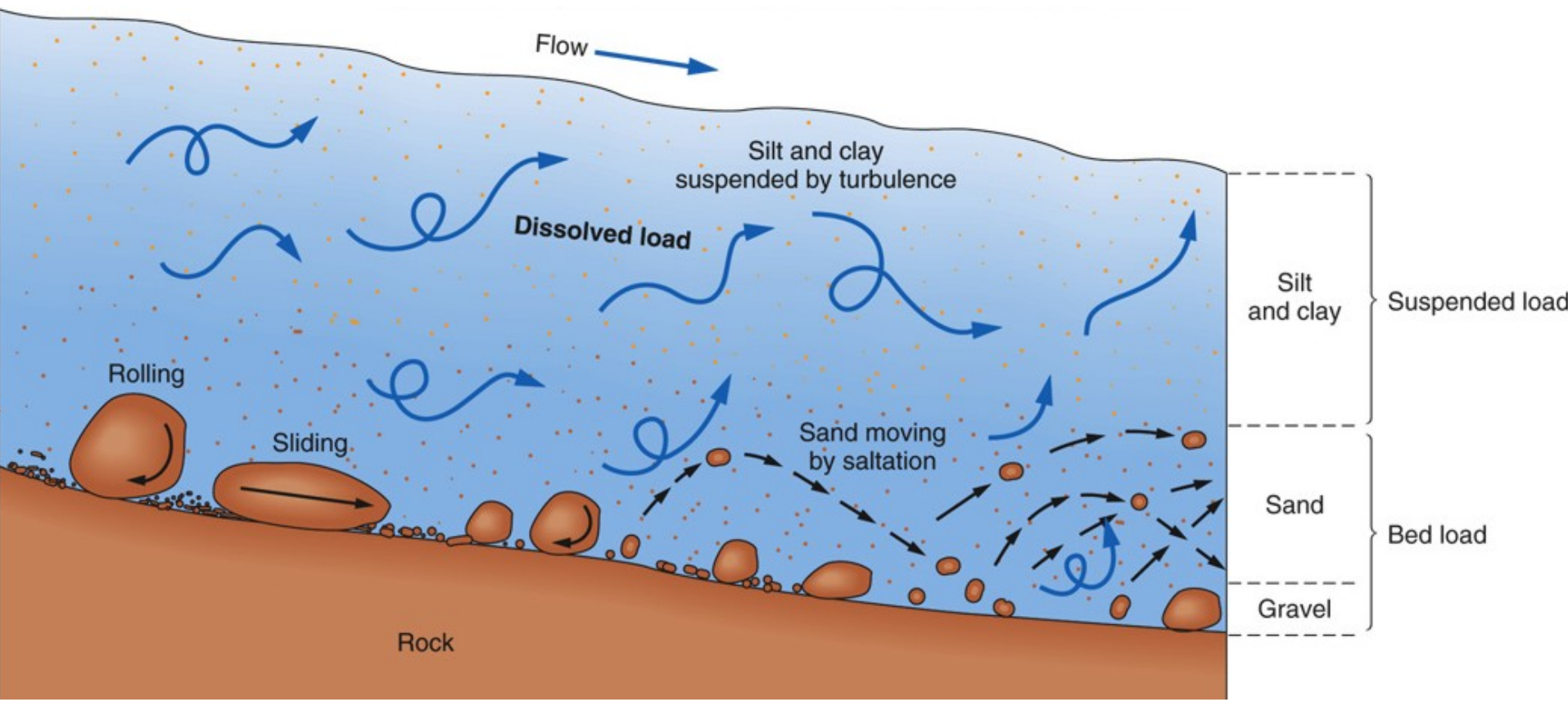


Figure 10.14

Longitudinal profile of a river

Water moving downhill by gravity

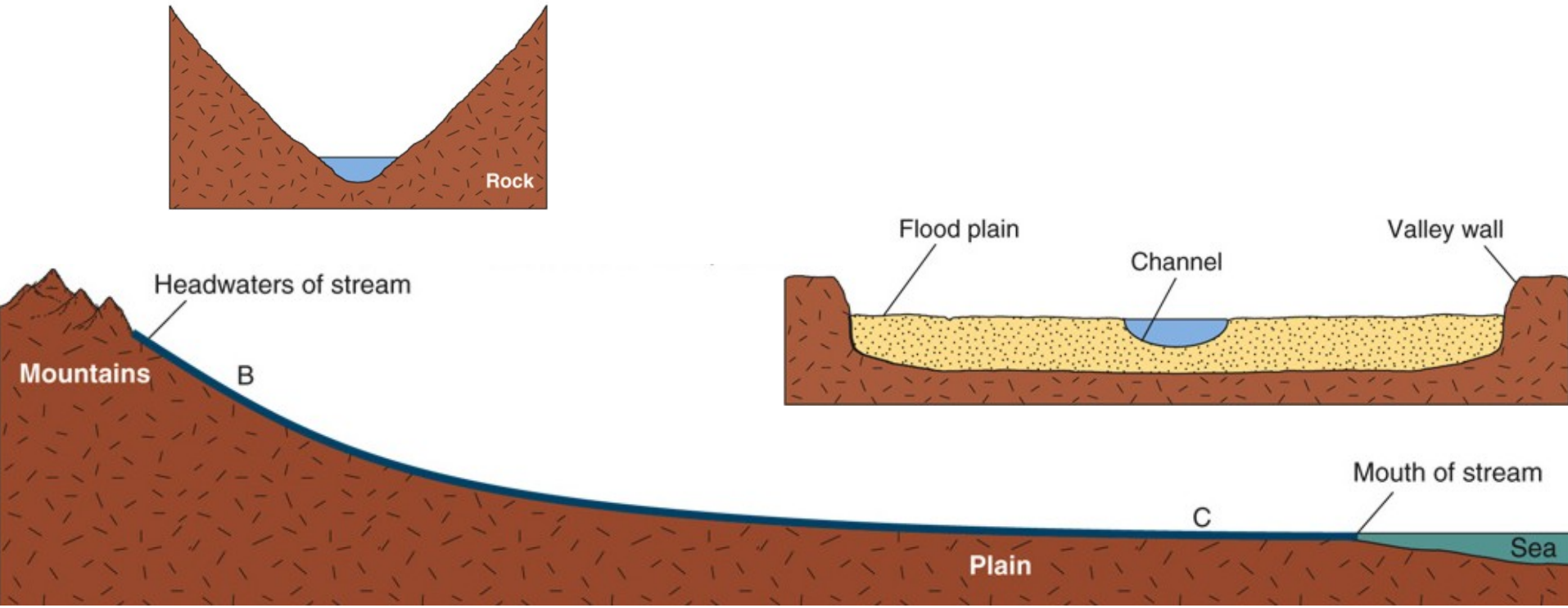
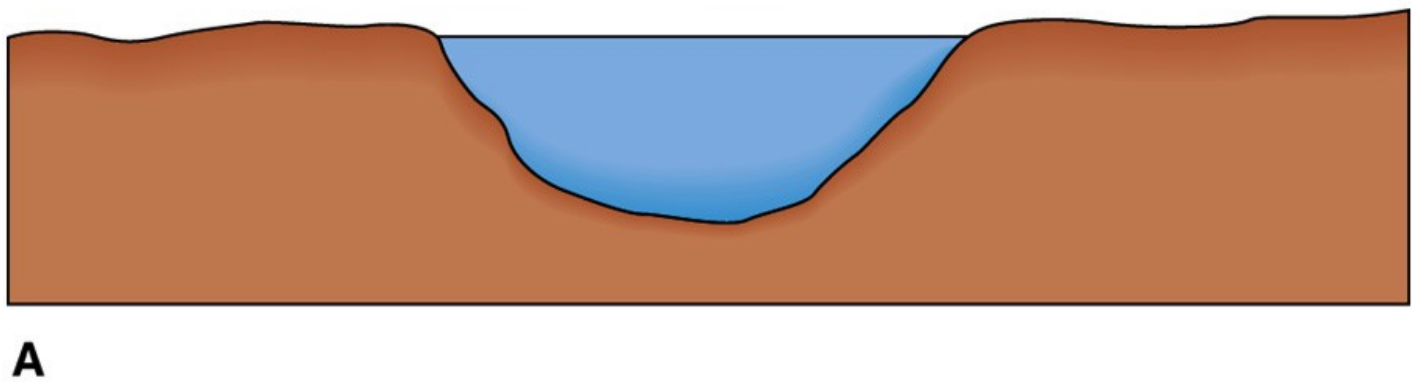


Figure 10.2

Channel shape & roughness

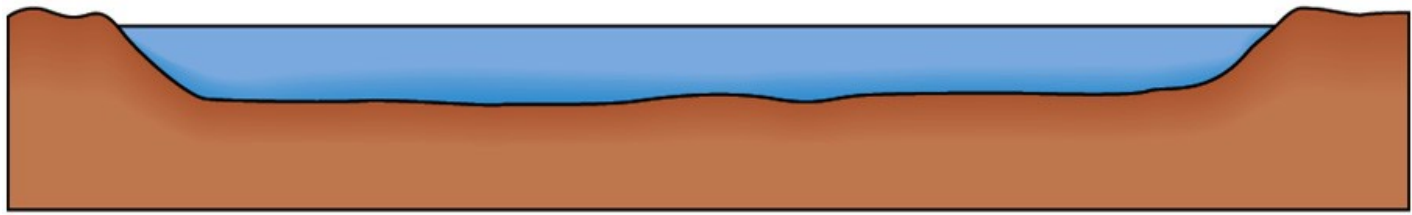
Figure 10.8

fast



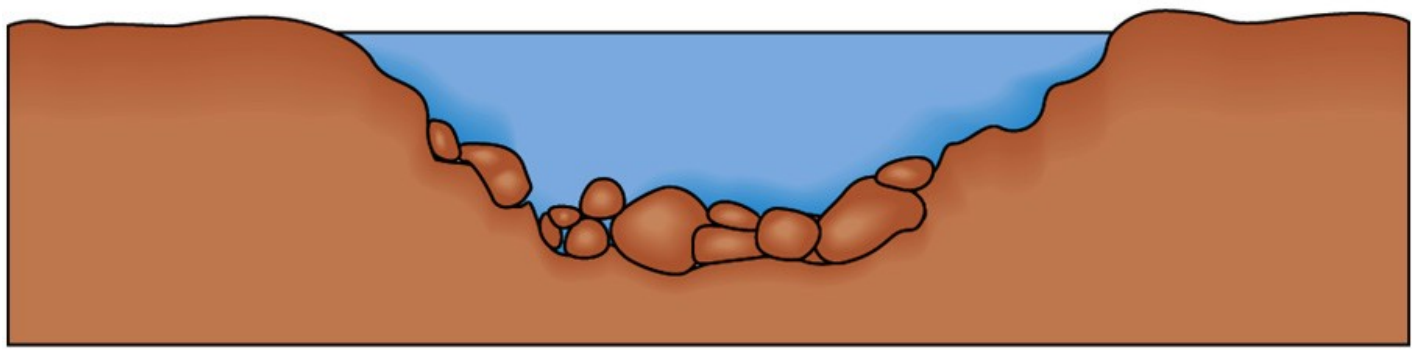
A

slow



B

mod fast



C

Speeding up stream flow

The venturi effect

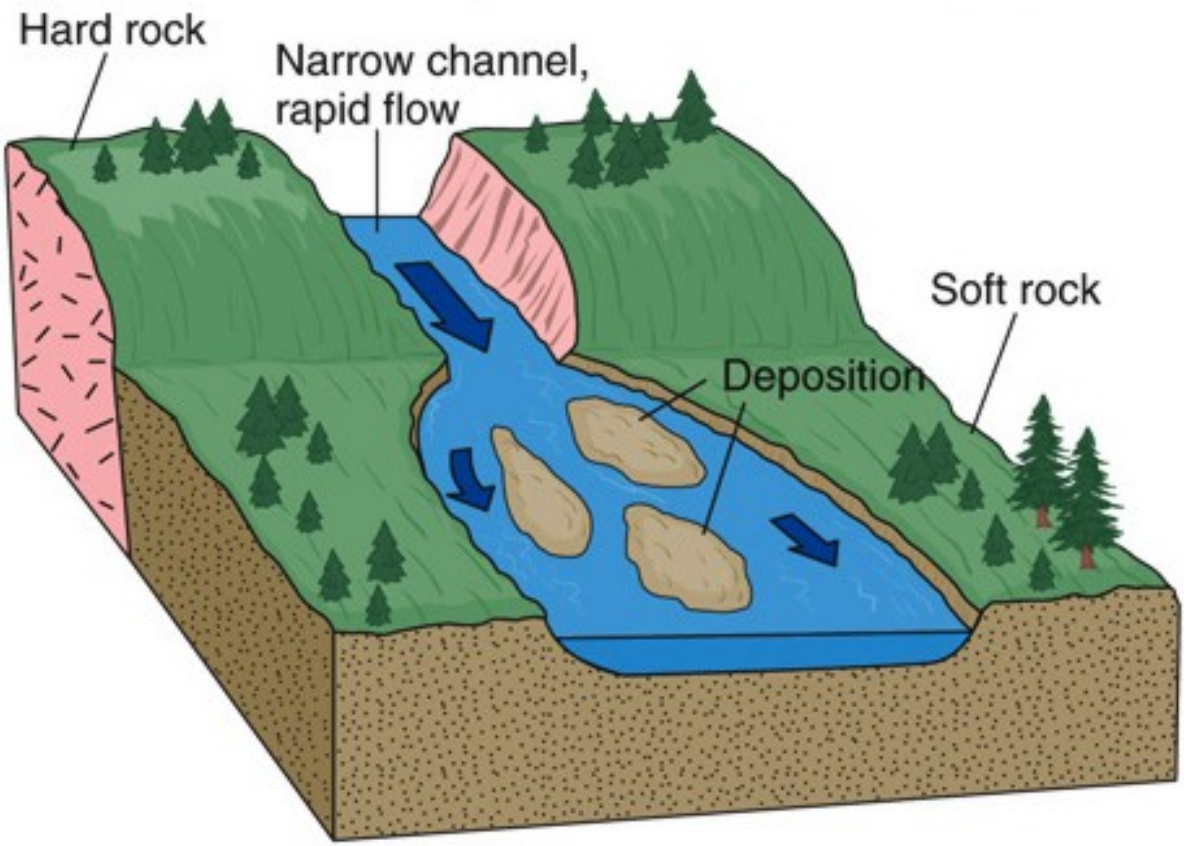
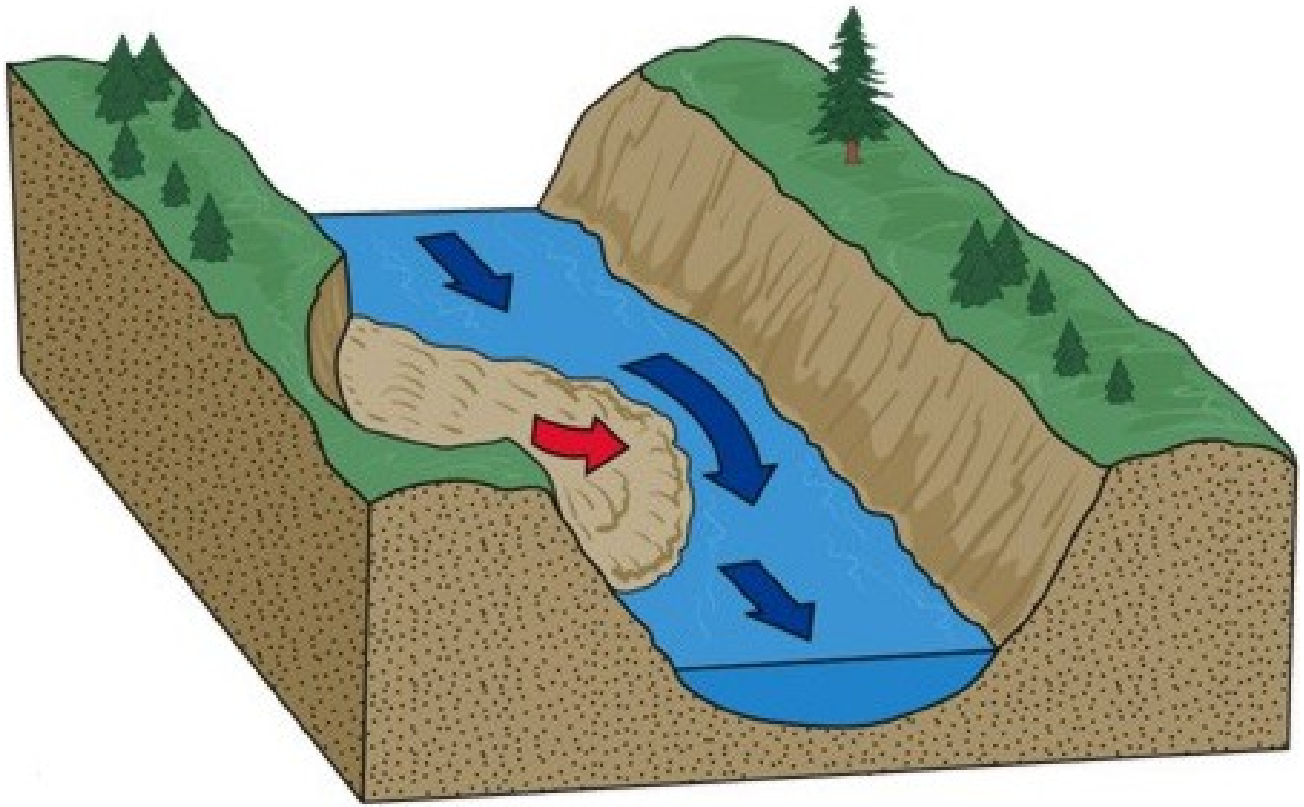


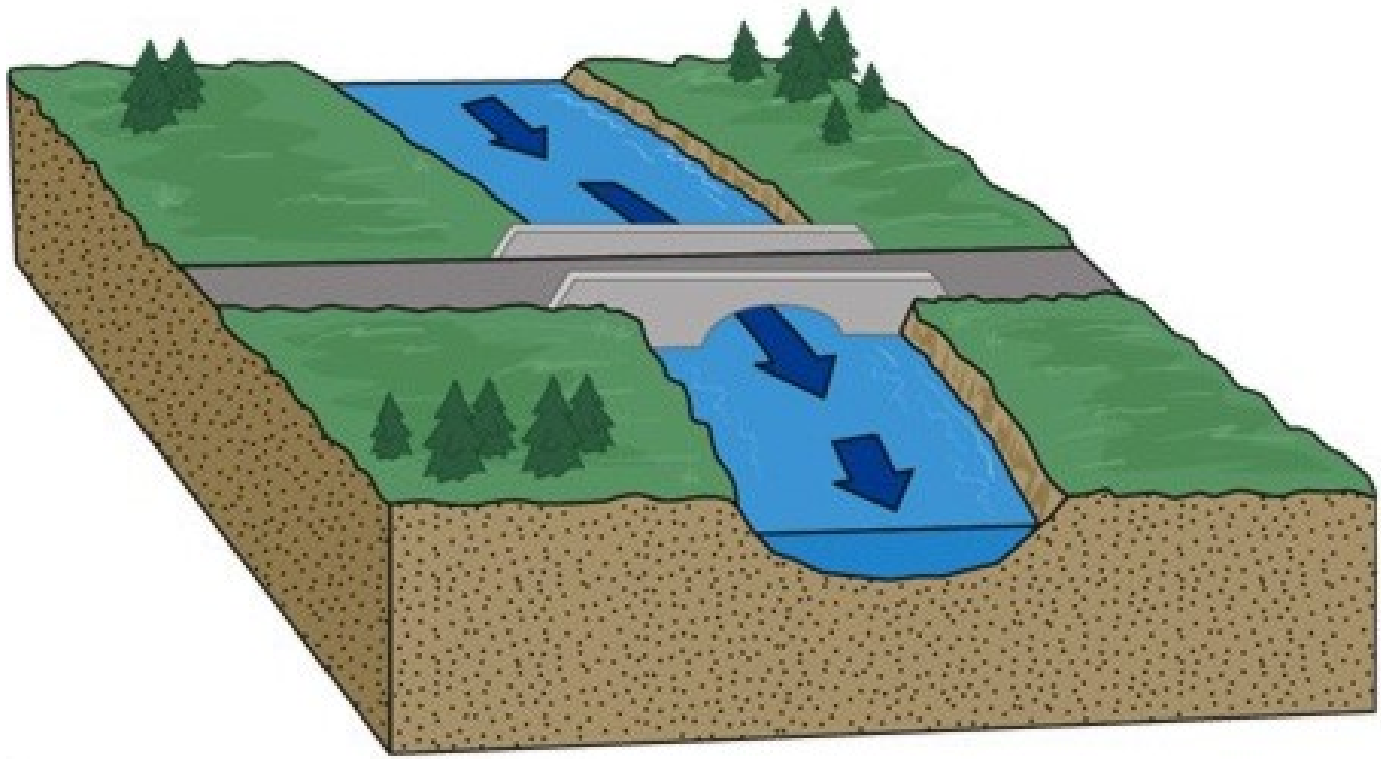
Figure 10.9

Speeding up stream flow



Speeding up stream flow

Man-made obstacles



Bridge scour during high flow

Note the difference in water height up- and down-stream of bridge

Maximum discharge

Note polish and rounding of boulders

Find max height of water level

Figure 10.10

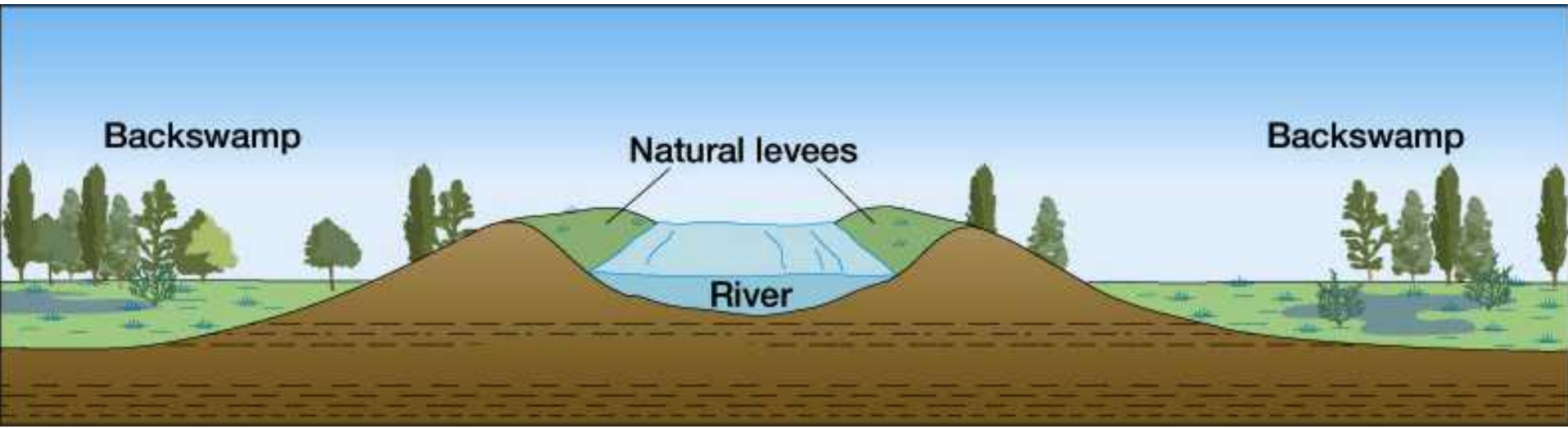
High-gradient streams

Figure 10.15

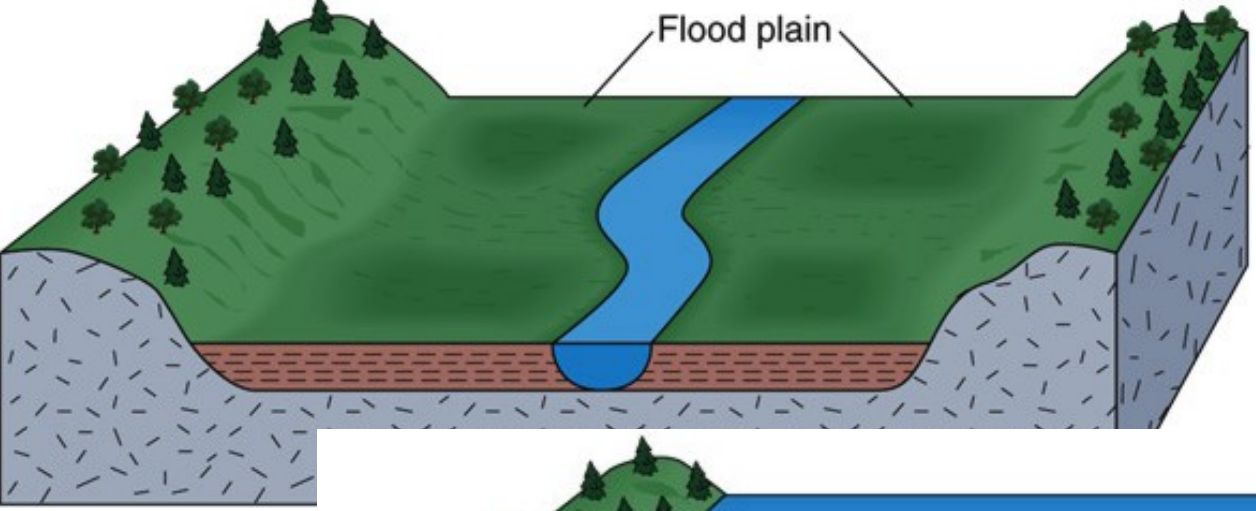
Gravel moved during flood, deposited as flood waned (note sand on top)

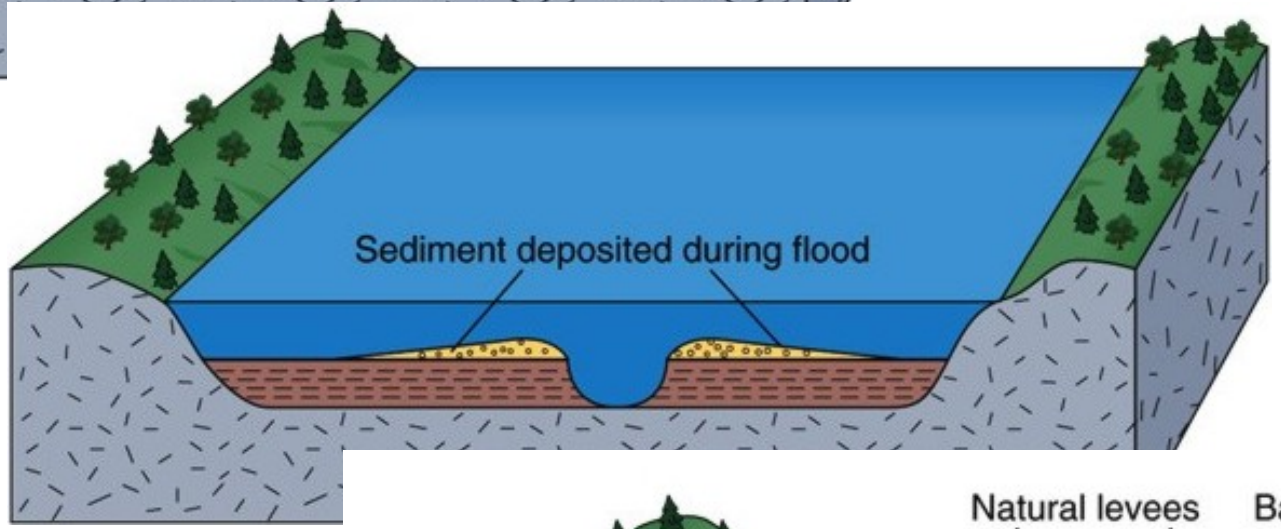
River levees

Levees are created naturally by floods



Forming levees





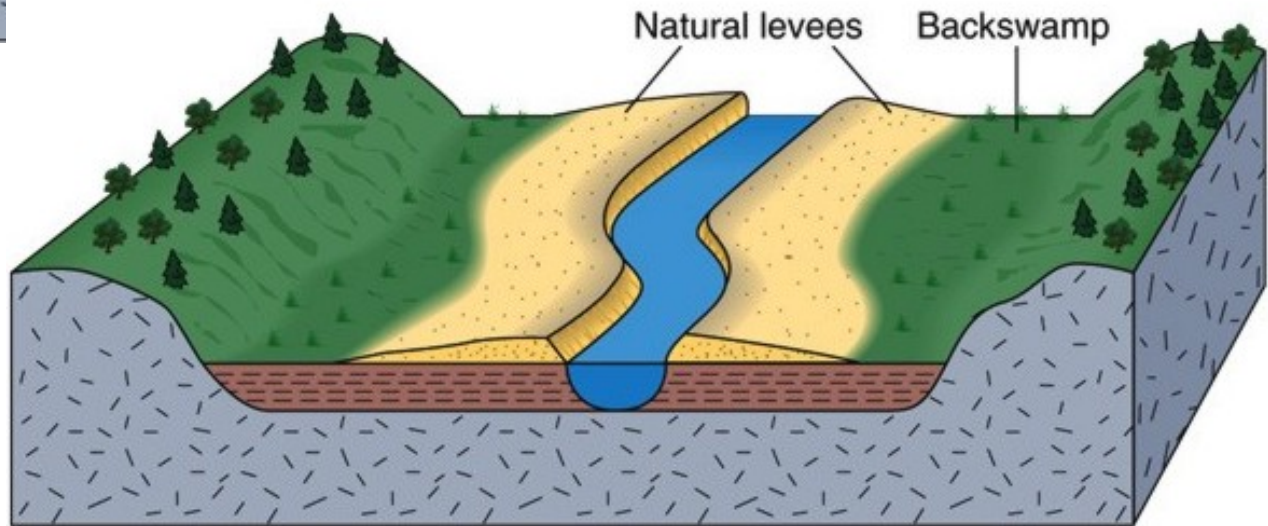


Figure 10.27

Major floods may break a levee