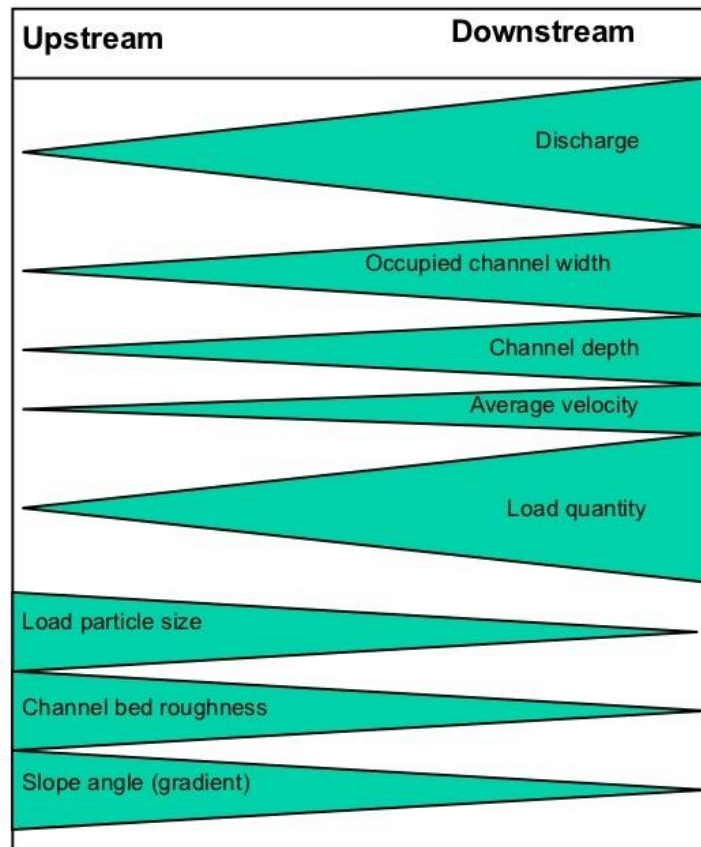


The Bradshaw Model

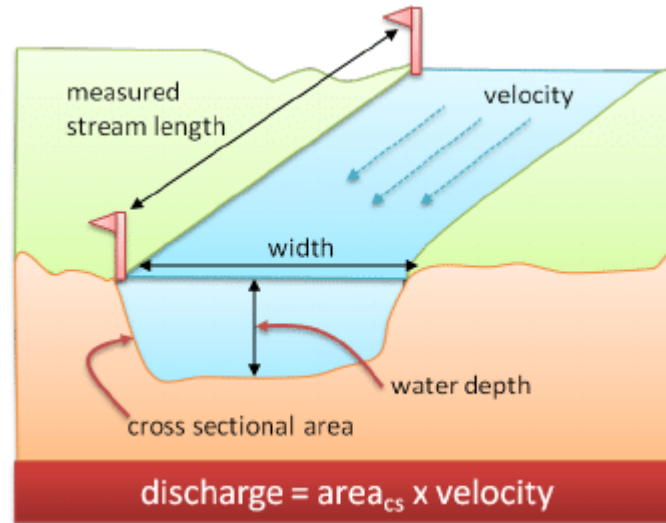




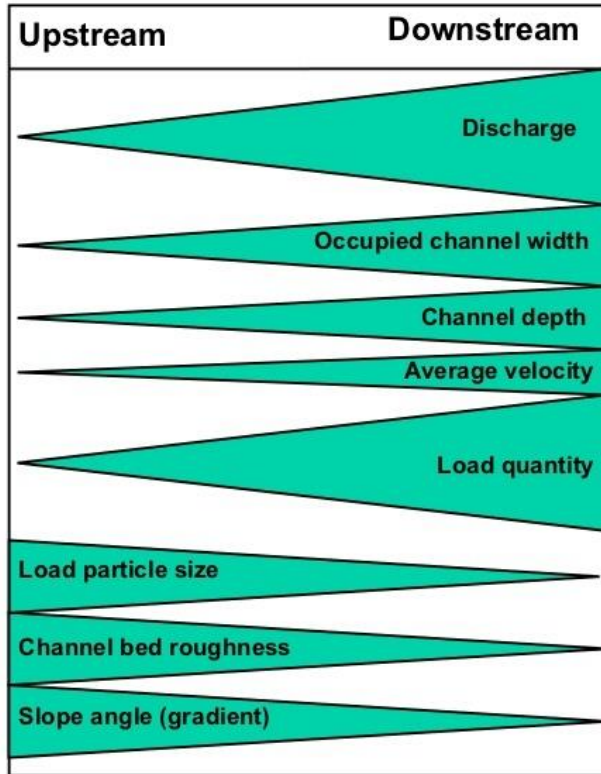
Discharge

Upstream	Downstream
	Discharge
	Occupied channel width
	Channel depth
	Average velocity
	Load quantity
Load particle size	
Channel bed roughness	
Slope angle (gradient)	

The discharge of a river is the volume of water which flows through it in a given time. It is usually measured in cubic meters per second.



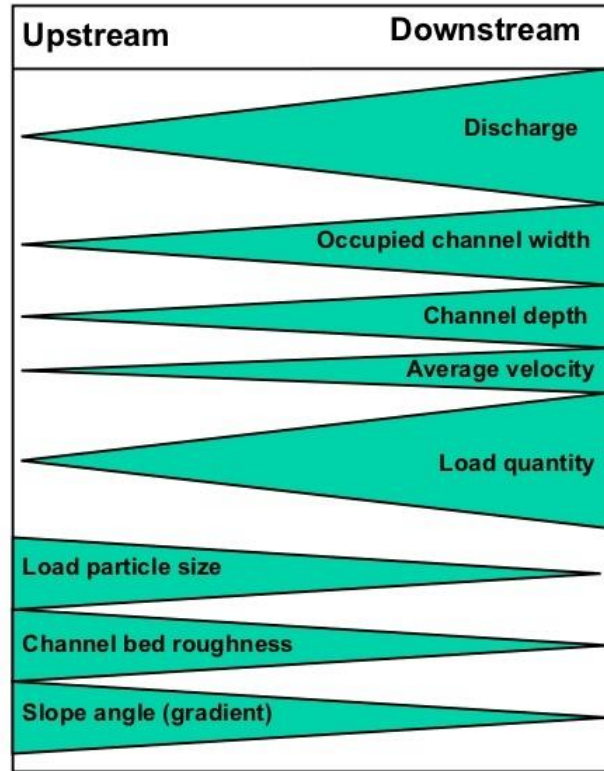
Discharge



Increases due to the input from a greater amount of the drainage basin above the point of measurement



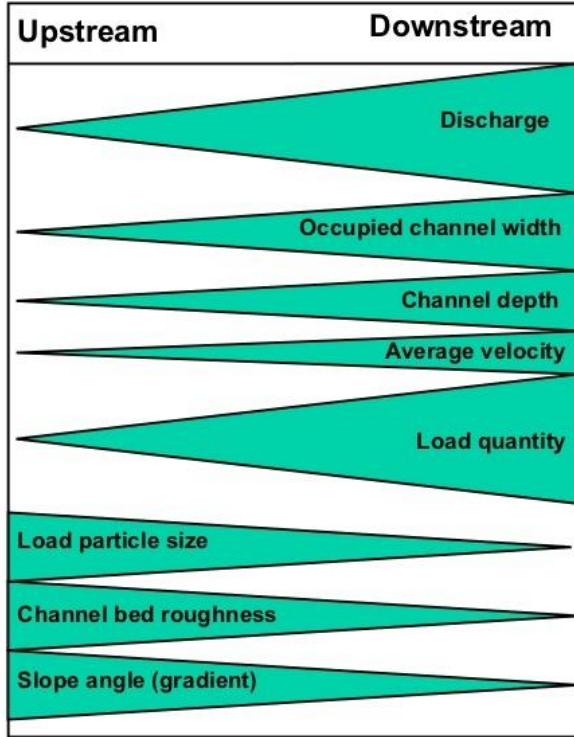
Occupied Channel Width



Distance across the actual channel, measured at the water surface

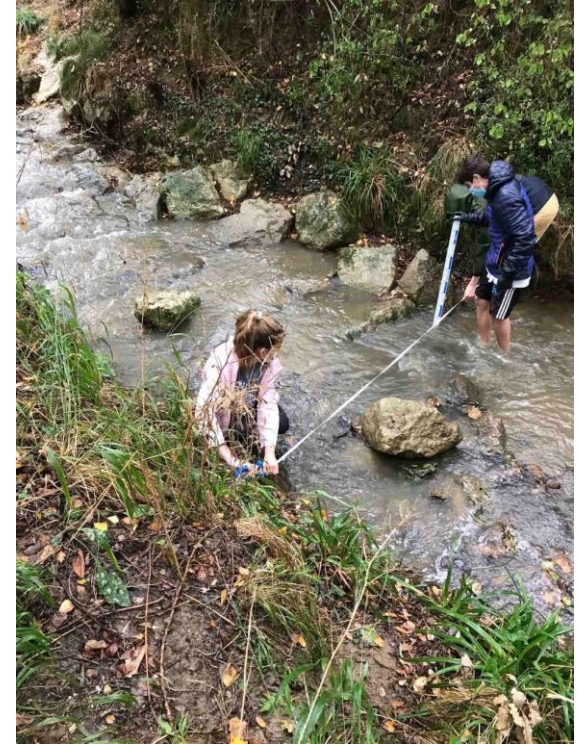


Occupied Channel Width

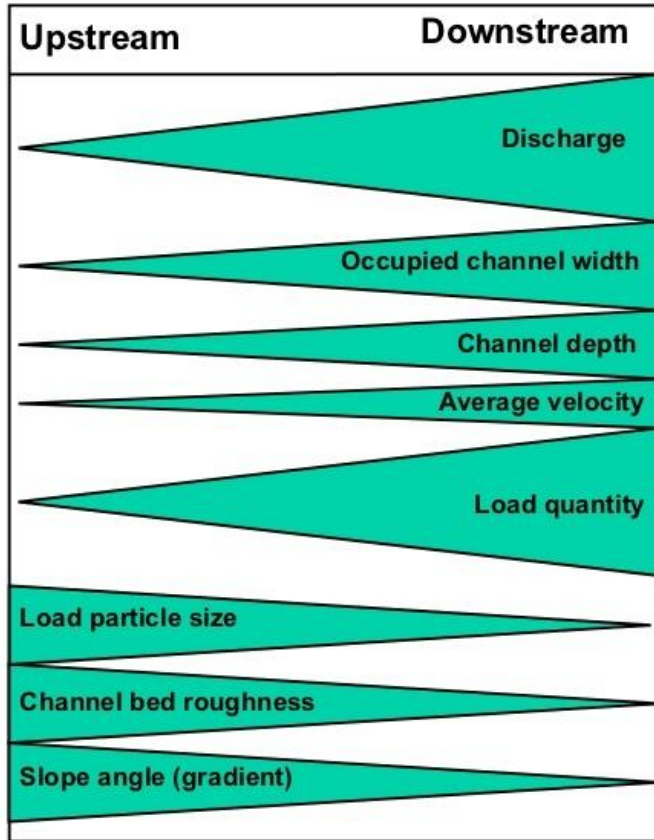


Distance across the actual channel, measured at the water surface

Increases due to increase in discharge, input from tributaries etc.



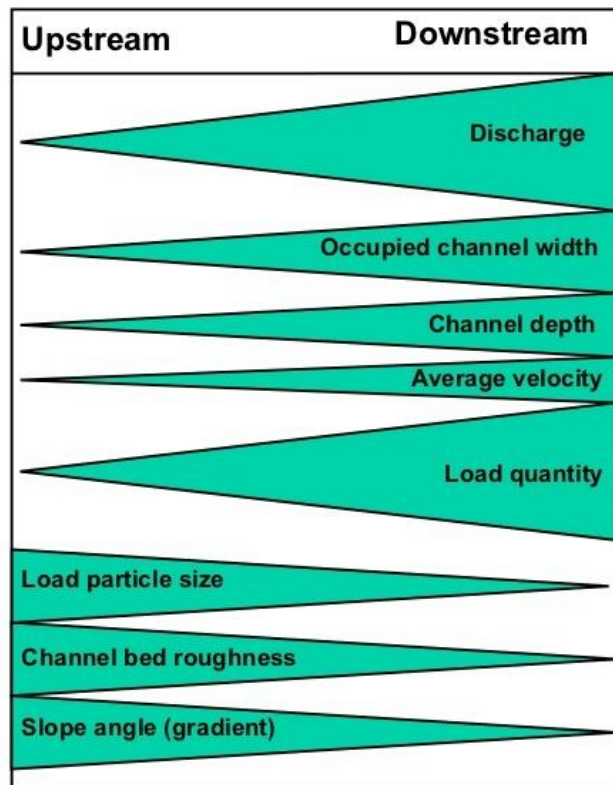
Channel Depth



The height from the water surface to the channel bed

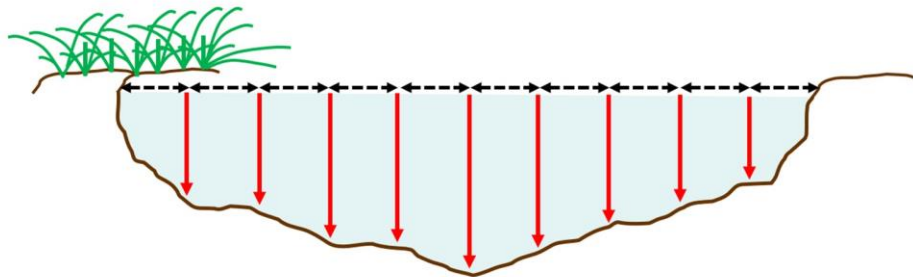


Channel Depth

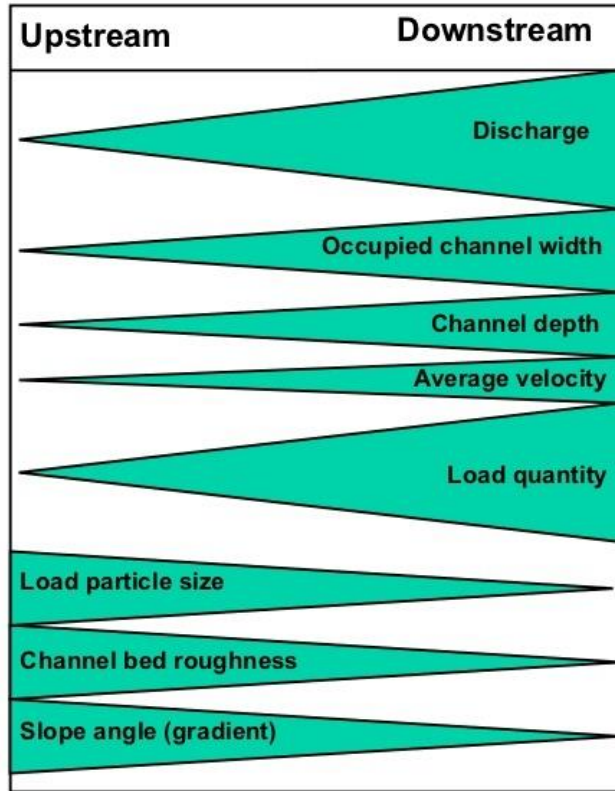


The height from the water surface to the channel bed

Increase downstream as does the discharge of the river



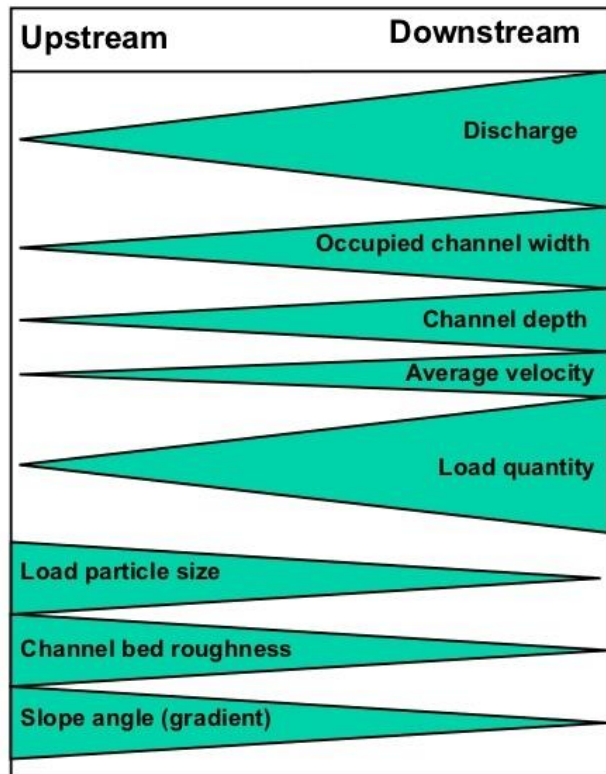
Average Velocity



Velocity of river – measured in metres per second.



Average Velocity



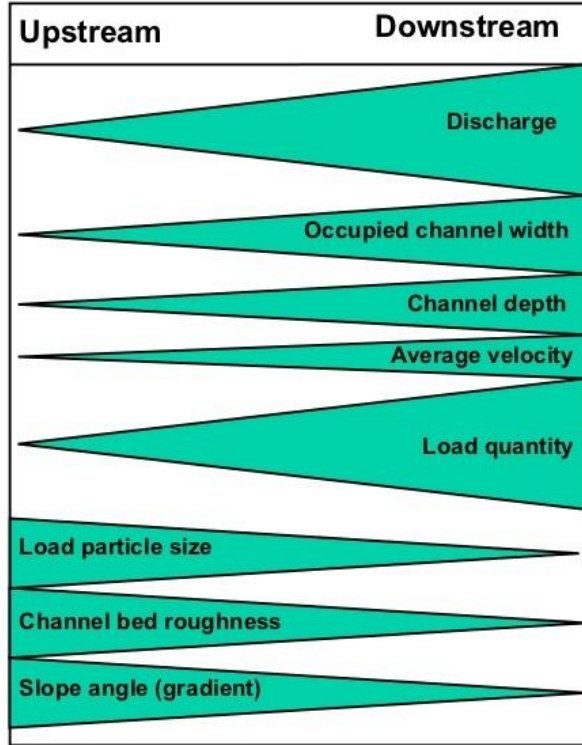
Steady increase downstream

How can it be so if the gradient is decreasing?

Downstream the river becomes more efficient with proportionally less contact with its bed and banks

Shown by higher hydraulic radius and lower channel bed roughness

Load Quantity

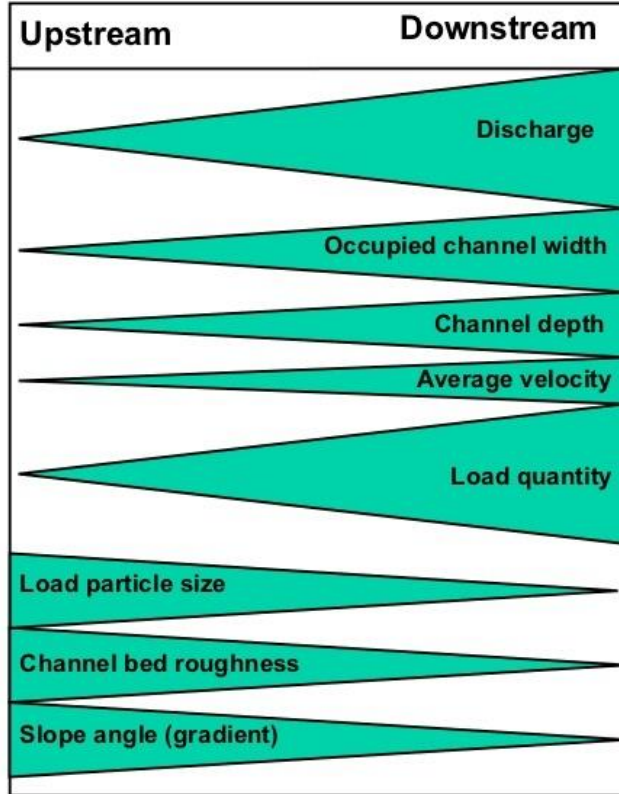


How much material (sediment, pebbles etc) the river is carrying.



Check out the colour of the water. Why is it this colour? This is the load of sediment being carried.

Load Quantity

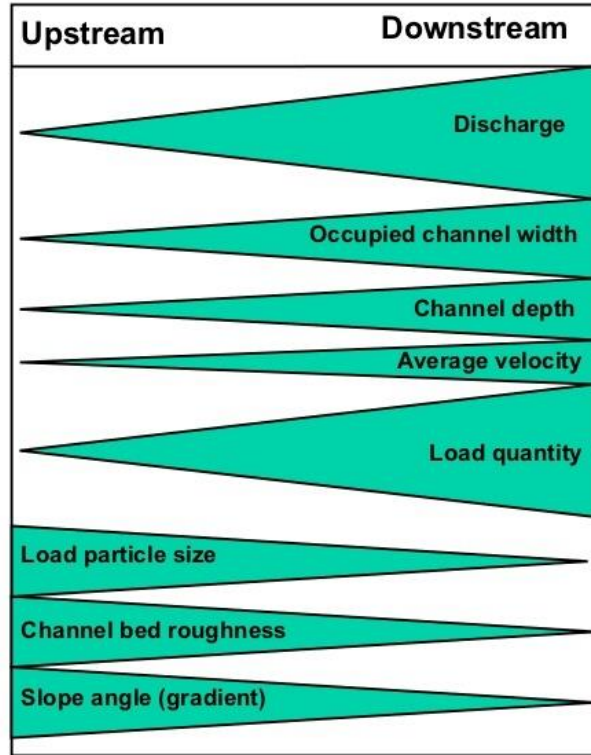


Total load of all sizes

Increases with discharge and velocity



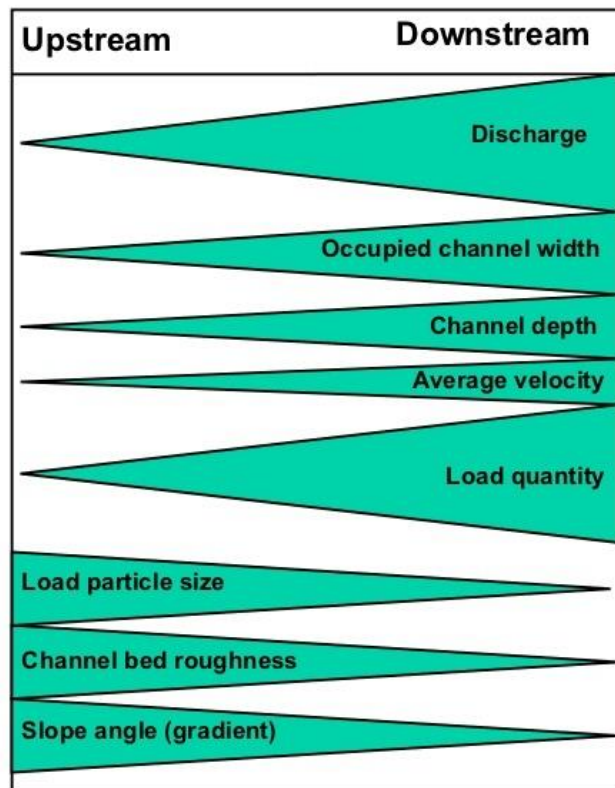
Load Particle Size



The size of the pebbles in the bed of the river. Measure in metres (e.g. 10cm pebble = 0.1m).



Load Particle Size



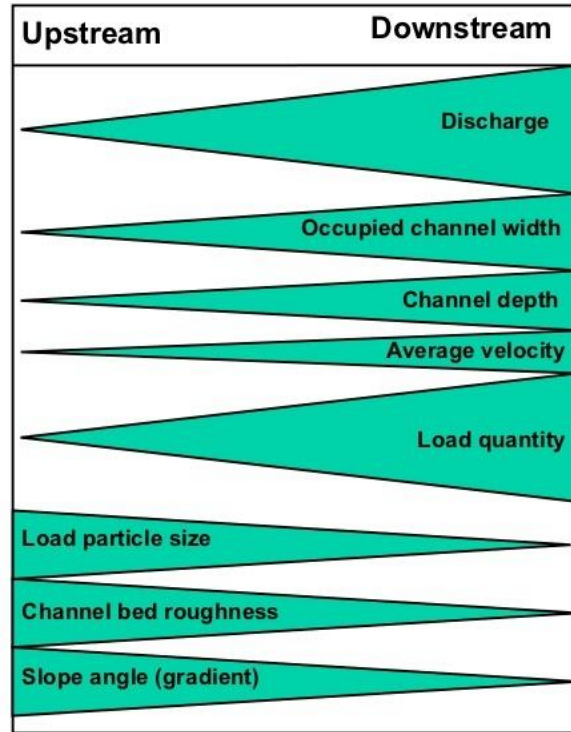
Decreases considerably downstream

Angular pebbles become more rounded

Erosional process of attrition



Channel Bed Roughness

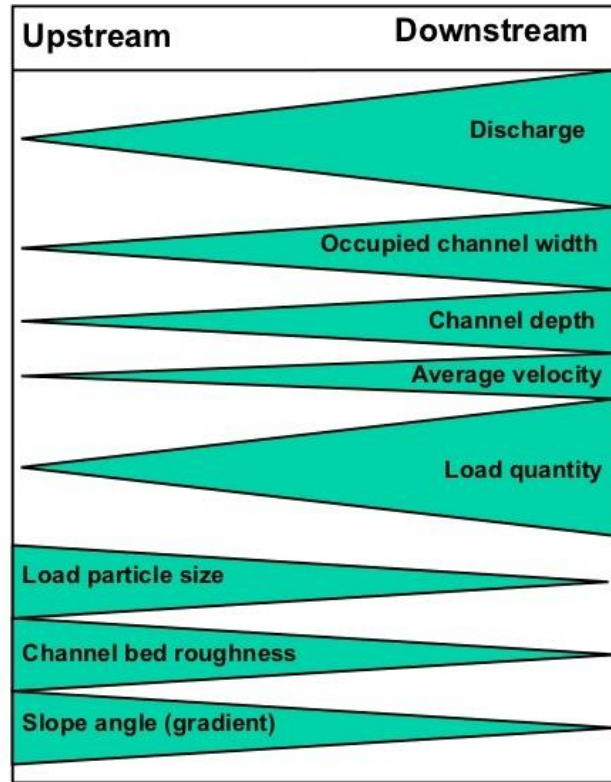


Decreases because of fewer stones etc, smaller load particle size etc.

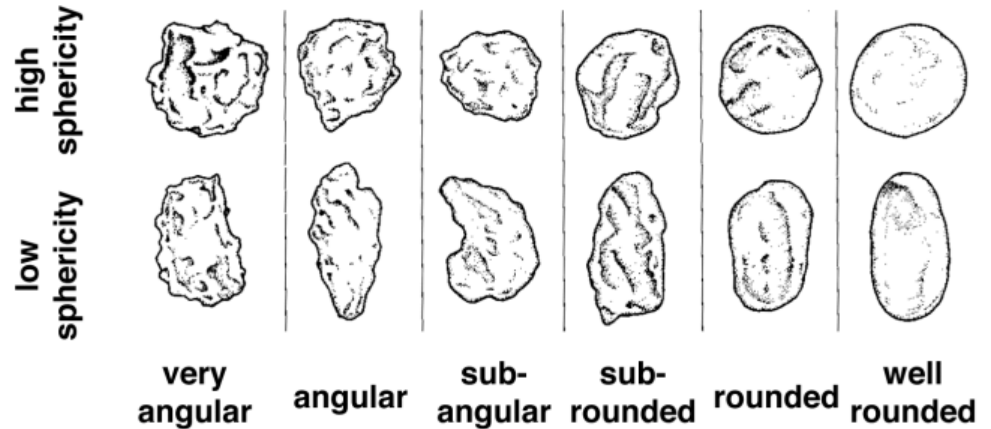


Rough and uneven bed in the upper course of the Aussonelle.

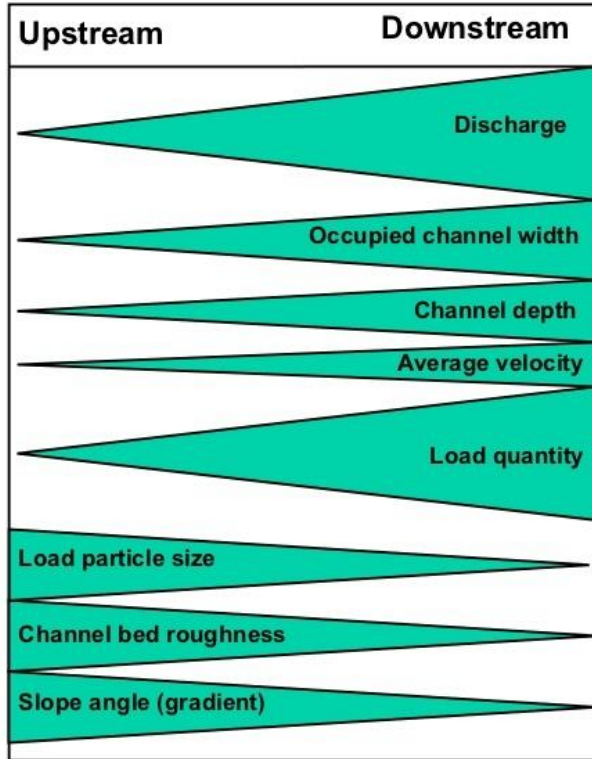
Channel Bed Roughness



Decreases because of fewer stones etc, smaller load particle size etc.



Slope Angle



Measured in degrees

Decreases as your move downstream.

