

RIVERS REVISION

Erosion – When the river **BREAKS AWAY** material on the bed and banks.

- **Abrasion** – the material carried by the river wears away the bed and banks.
- **Hydraulic action** – the power of the water forces air into gaps in the banks and weakens them so they eventually collapse.
- **Attrition** – the particles carried by the river (its 'load') are bashed against one another, making them smaller and rounder.
- **Solution** – particles are dissolved.

River Transport - When the river **MOVES** the material

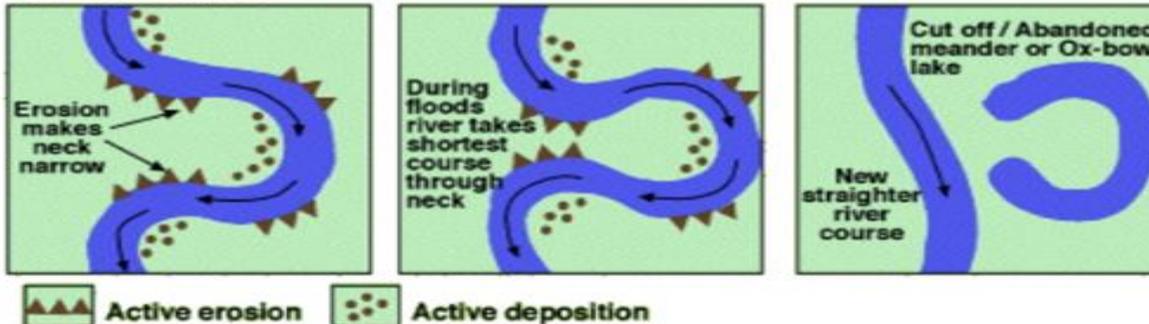
- Traction – rolling large stones along the bed of the river.
- Saltation – bouncing smaller particles along the bed.
- Suspension – sediment that floats within the river flow.
- Solution - minerals are dissolved in the water and carried along in

Deposition – when the river **DROPS** the load that it is carrying because the water has slowed due to **friction** in the shallow part of the stream

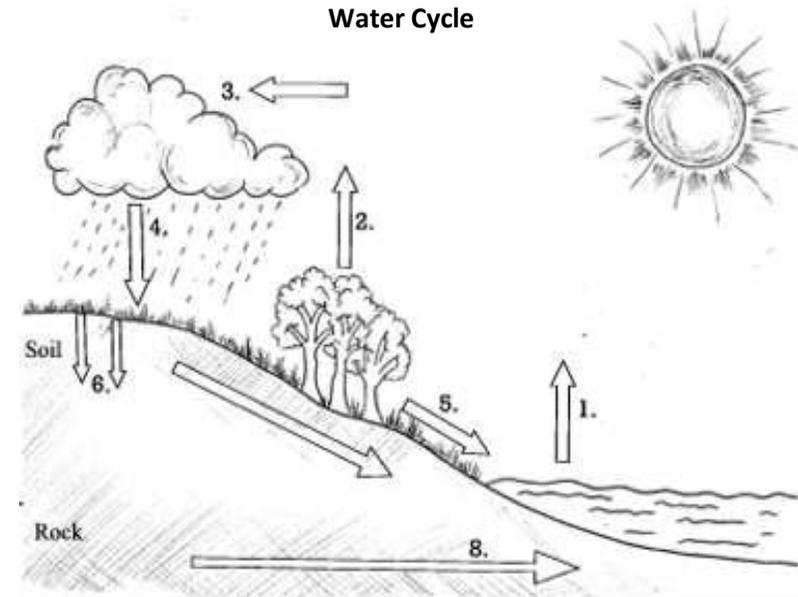
How is a waterfall formed?

A waterfall is formed when there is hard rock over soft rock. The water falls into a plunge pool. The water erodes (breaks away) the soft rock faster than the hard rock, undercutting it. This leaves an overhang of hard rock. Due to gravity the hard rock eventually falls off into the plunge pool below. The process then repeats itself.

Ox-bow Lake

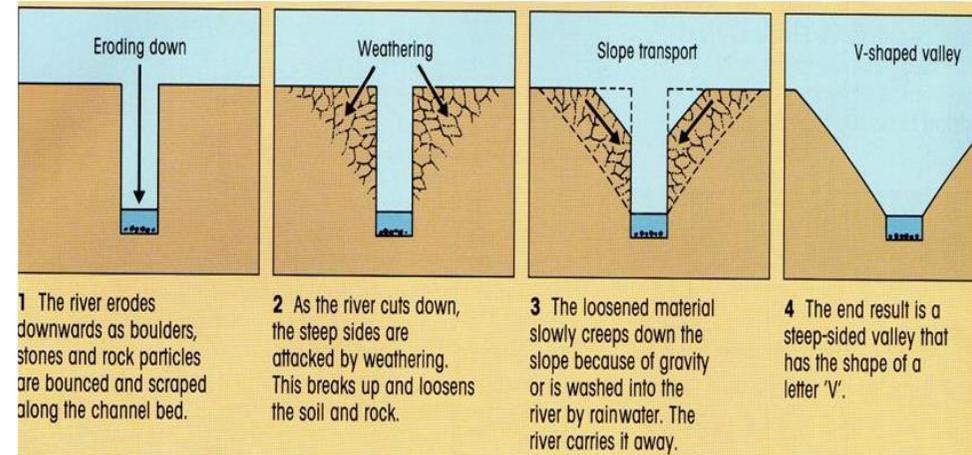


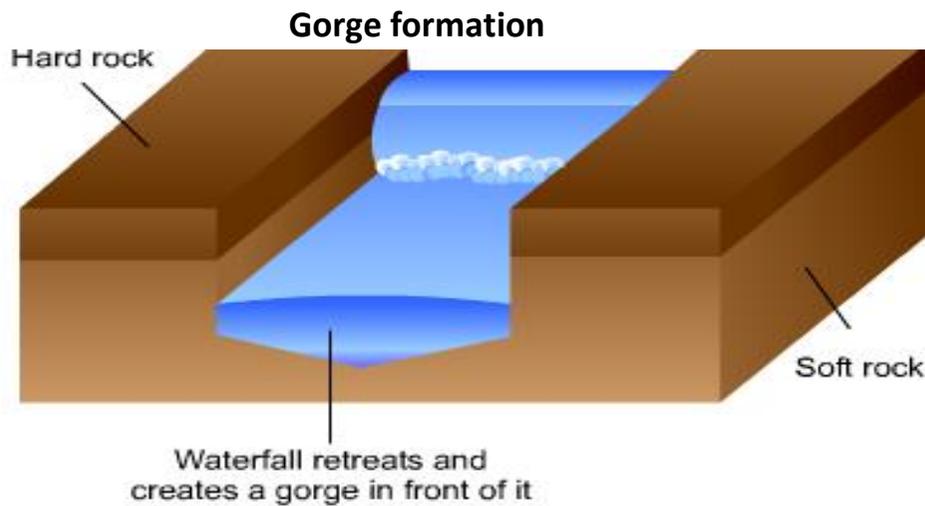
Water Cycle



- 1 = Evaporation (When the sun heats the water and turns it into water vapour)
 2 = Evapotranspiration (When water is evaporated from the leaves of plants)
 3 = Condensation (When water vapour cools and turns into liquid)
 4 = Precipitation (When water falls from clouds as rain, snow, sleet or hail)
 5 = Surface Run off (When water flows over the surface of the land)
 6 = Infiltration (When water sinks into the soil)
 8 = Ground Through Flow (when water flows underground back towards the sea)

V Shaped Valley Formation





Causes of flooding

- **A steep-sided channel** - a river channel surrounded by steep slopes causes fast surface run-off.
- A drainage basin, consisting of mainly **impermeable rock** - this will mean that water cannot percolate through the rock layer, and so will run faster over the surface.
- A **drainage basin in an urban** area - these consist largely of impermeable concrete, which encourages overland flow. Drains and sewers take water quickly and directly to the river channel.
- **A lack of vegetation or woodland** - trees and plants intercept precipitation (ie they catch or drink water).
- **Very wet soil** – soil that is already saturated allows water to build up on the surface
- **Very dry soil** – this prevents water from sinking in

Floods can cause **damage to homes and possessions** as well as **disruption to communications**. However, flooding can also have **positive impacts** on an area. Flooding deposits fine silt (alluvium) onto the floodplain, making it very fertile and excellent for agriculture. People living on or near floodplains may rely upon regular flooding to help support their farming and therefore provide food

Flooding definition- Flooding occurs when a river **overflows** its **banks** onto the area known as the **floodplain**.

Flood management techniques

Technique	Positives	Negatives
River engineering	<ul style="list-style-type: none"> • The river channel may be widened or deepened allowing it to carry more water. 	<ul style="list-style-type: none"> • Altering the river channel may lead to a greater risk of flooding downstream, as the water is carried there faster
Afforestation	<ul style="list-style-type: none"> • Trees are planted near to the river. This means greater interception of rainwater and lower river discharge. • This is a relatively low cost option, which enhances the environmental quality of the drainage basin. 	<ul style="list-style-type: none"> • Trees take a long time to grow • Will need a lot of trees to be effective
Dams	<ul style="list-style-type: none"> • Water is held back by the dam and released in a controlled way. This controls flooding. • Water is usually stored in a reservoir behind the dam. This water can then be used to generate hydroelectric power or for recreation purposes 	<ul style="list-style-type: none"> • Building a dam can be very expensive. • Sediment is often trapped behind the wall of the dam, leading to erosion further downstream. • Settlements and agricultural land may be lost when the river valley is flooded to form a reservoir
Managed Flooding	<ul style="list-style-type: none"> • The river is allowed to flood naturally in places, to prevent flooding in other areas - for example, near settlements. 	<ul style="list-style-type: none"> • Some land may be wasted and not used effectively
Land use zoning for flood plains	<ul style="list-style-type: none"> • This reduces the chance of flooding and the risk of damage to property. 	<ul style="list-style-type: none"> • There can be resistance to development restrictions in areas where there is a shortage of housing. • Enforcing planning regulations and controls may be harder in LEDCs.