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River Landscapes

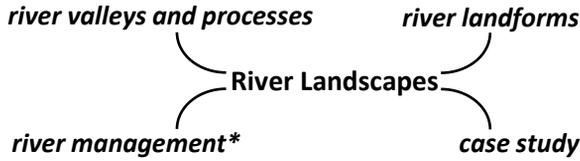
Hard Engineering



quiz



The Big Picture



Hard Engineering

Hard engineering river management involves the construction of structures built to control the flow of water and reduce flooding. Hard engineering strategies work against nature. Decisions about hard engineering solutions are based on cost-benefit analysis.



Dams and Reservoirs

Benefits

- Large storage capacity
- Generate electricity
- Controlled release of water
- Source of drinking water

Costs

- Expensive
- People displaced
- Large area of land flooded
- Sediment is trapped behind the dam



Key Terms



Channel straightening – Removing meanders to straighten a river channel.



Dam – A structure across a river to control the flow of water.



Embankments – Building up the banks of a river creating levees or building walls.



Flood-relief channel – An artificial channel to divert water.



Hard engineering – building structures, to control natural processes locally.



Reservoir – An artificial lake where water is stored.



Channel Straightening

Benefits

- Water moves quickly away from urban areas
- Navigation improved
- Reduces flood risk in prone areas
- Reduces insurance costs

Costs

- Expensive
- Looks unattractive
- Increases flood risk downstream
- Aquatic habitats affected



Embankments

Benefits

- Increases river capacity
- New habitats created
- Provides walkways
- Reduces flood risk

Costs

- Looks unattractive
- Expensive
- Ongoing maintenance
- If embankments fails flooding more serious



Flood Relief Channels

Benefits

- Flood risk reduced near urban areas
- New habitats created
- Recreation e.g. fishing and paddle boarding
- Reduces insurance costs

Costs

- Expensive
- Habitats disturbed
- Ongoing maintenance
- Looks unattractive if concrete used