

Sediment Transport: Engineering Structures vs. Protecting Ecosystems

Civil Engineering Applications: Managing Physical Changes to Protect Infrastructure

Sediment transport is the motion of granular particles driven by moving fluid, a subfield of fluid mechanics with profound and distinct consequences for engineered infrastructure and natural ecosystems.

Environmental & Ecological Applications: Managing Water Quality and Ecosystem Health

Hydrodynamics

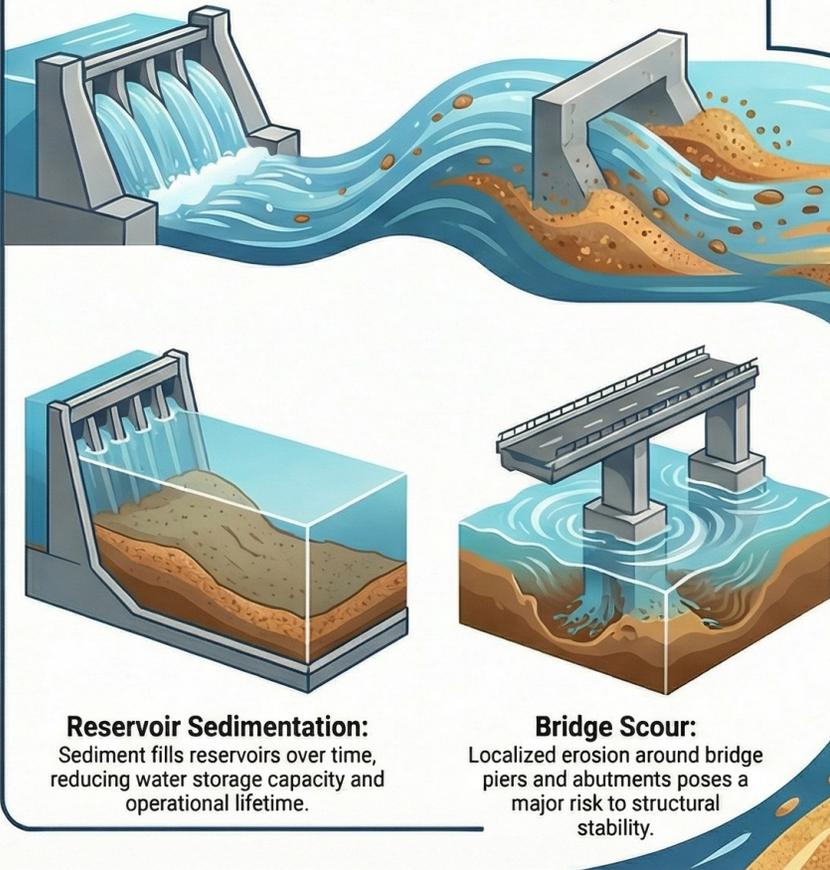
Sediment Response

Engineering Consequences

Hydrodynamics

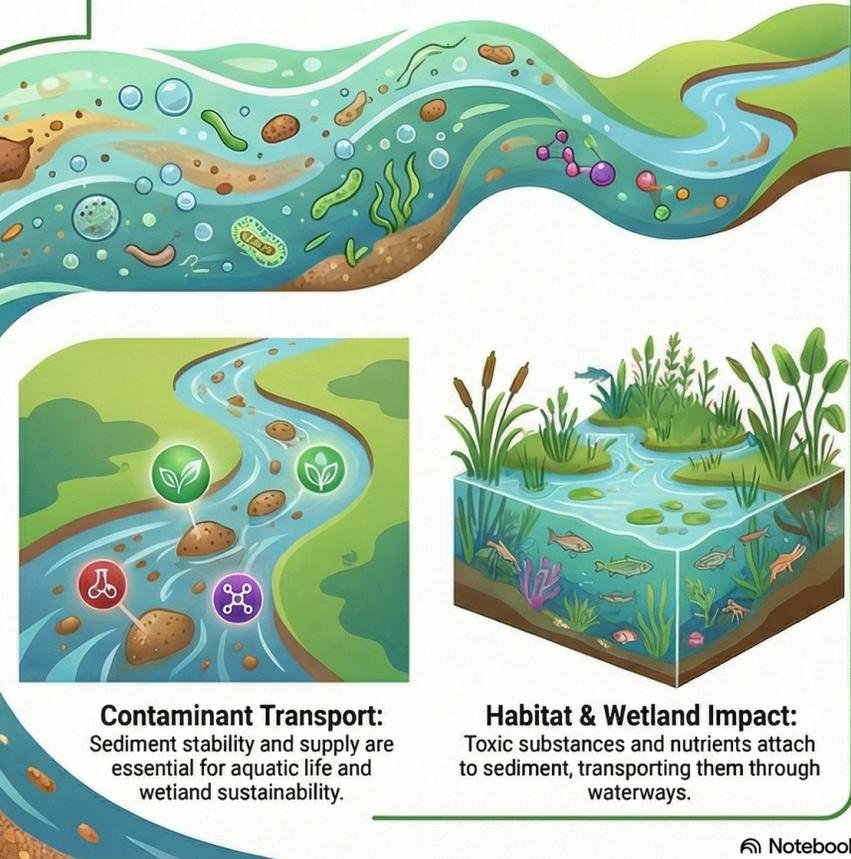
Sediment Processes

Biogeochemical & Ecological Outcomes



Reservoir Sedimentation:
Sediment fills reservoirs over time, reducing water storage capacity and operational lifetime.

Bridge Scour:
Localized erosion around bridge piers and abutments poses a major risk to structural stability.



Contaminant Transport:
Sediment stability and supply are essential for aquatic life and wetland sustainability.

Habitat & Wetland Impact:
Toxic substances and nutrients attach to sediment, transporting them through waterways.