



CO/WY and Engineering Constraints

Social, permitting, and legal aspects of low-tech design and implementation in CO/WY

Engineering Aspects



What river structures require a professional engineer's stamp?

- Life safety and protection of property such as infrastructure
- Man-made structures (diversion, embankment, levee)
- Modeling and analysis required to demonstrate channel stability or floodplain impacts
- What about natural infrastructure?

Engineering Aspects



Engineering constraints...

- Limited design criteria for BDAs and PALs
- Engineering design plans
 - Do we need for plans when mostly field fitting?
- Modeling and analysis
 - Level of effort for temporary structures?

Permitting Aspects



Regulating BDAs is a complex process because...

- engineering criteria and permitting rules are not well defined
- Beaver “dams” carry a stigma
 - Alter water delivery
 - Impede fish passage

Permitting Aspects

A photograph of a stream with a large pile of sticks and branches in the foreground, and a car parked on a hill in the background.

Local

- Floodplain development permit
- Building permit

State

- Water Quality Cert
- WQ Construction Activities
- SHPO – Historical sites
- SEO – water augmentation

Federal

- FEMA – CLOMR
- USACE – 404
- USFWS – ESA

Legal Aspects: Water Rights



Wyoming

- The permit application resolved conflict by setting a limit of 10 BDAs and 20 AF per permit and giving the SEO a way to track and inspect upon completion.
- The permit is not considered an appropriation of a surface water right "due to the anticipated limited life of the facilities"

Legal Aspects: Water rights



Colorado

- CRS 37-92-502(7) – the State Engineer has “the power and duty to issue orders so that the streams of the state may be kept clear of unnecessary dams or other obstructions which may restrict or impeded the flow of water to the water users of the state.
- Separate analysis for beavers and manmade structures (BDAs, BMS)
 - Beaver dams are considered natural storage
 - Mimicking beaver dams requires placing “structures” so water rights come into play

Legal Aspects: Water Rights



Colorado

- No clear picture: How to get DNR, DWR, CPW, and CWCB all on the same page?
- Historical footprint test
 - Reconnect floodplain and adjacent wetlands, increase surface area but stay in the same historical context/footprint.
 - State Water Agencies and AG said no to historical footprint test. Instead asked for augmentation plan, which create a major hurdle to PBR
 - Draft memo (2019) with direction went on hold while state agencies sorted out a comprise to address concerns with water rights.

An aerial photograph of a forest stream winding through a dense green forest. The water is dark and reflects the surrounding trees. A blue rectangular box is overlaid in the top left corner, containing the title text.

Legal Aspects: Water Rights

Considerations to reduce risk of potential water rights concerns

- Education
 - start with the science of beavers, not BDAs
 - leverage concepts historical footprint concepts
- Location – look for opportunities that minimize potential conflict with water right owner (e.g., upper watershed).
- Methods/designs – look closely at design & how it is conveyed to stakeholders
- Timing – think of implementation timeline and flow scenarios
- Engagement & partnerships – transparency to address concerns