

Project Planning Considerations to reduce risk of potential water rights concerns (and other potential conflicts):

- **Historical Footprint** – design project to stay within it
- **Choose these factors with care:**
 - **Location** – look for opportunities/places that minimize risk of conflicts with water rights and flooding from beavers –e.g. upper watersheds above reservoirs/diversions, partnering with Sr. water right landowners
 - **LTPBR method/design** – beaver mimicry-type structures should mimic naturally occurring beaver dams that are porous, temporary/deformable, and made of natural materials that allow base flow and fish passage through, under, and around.
 - **Timing of installation** – be careful during low-flow summer months – you don't want your project to reduce flows downstream of your project for any significant time (1 day can be significant)
- **Engagement, transparency, many partners** – who would potentially be concerned? Include them or at least address their concerns; project planning that proactively includes water users and other watershed stakeholders who would potentially be concerned has many benefits.
- **Post project considerations** –
 - **Adaptive mgt** – what worked, what didn't, opportunities to apply lessons learned
 - **Monitoring changes** – hydrology/flows/surface area, vegetation condition, sediment capture, plant and animal species diversity
 - **Assist landowners with beaver coexistence** issues or other post project aspects if needed



Photo from Shawn Conner, BioLogic

Slide from Colorado Healthy Headwaters Working Group

How to identify the historical footprint?

Many tools available, common ones include:

- Aerial photos if available prior to disturbance (usually after 1930s)
- Colorado Natural Heritage Program's Historical Wetland Areas mapping tool (Watershed Planning Toolbox)
- Reference reaches of similar streams, valleys, wetlands
- Geological testing – soil profiles, geomorphic analysis



BDA design considerations –

Very aggressive BDA design shown on left vs a very low profile super porous design on the right



Planning ahead for beaver to potentially return

You can also take **pre-emptive measures** to reduce risk of beaver building upon road culverts – build a small “starter” beaver dam to encourage them to build upon it versus the culvert.



Coexistence measures are often key if Beaver return to the stream you restored – plan ahead for that

Assistance for landowners with funding and expertise in choosing the right coexistence measure is an important aspect when considering LTPBR budgets



Photos by Dr. Susan Charney, USDA Pacific Research Station

Comprehensive LTPBR “state of the science” report by Jackie Corday

- ❖ LTPBR state of the science review was a deliverable for an American Rivers CWCB grant called:

Engaging West Slope Agriculture in Headwaters Restoration to Improve Water Security

- ❖ **American Rivers website link for the paper:**
[State of the Science on Restoring Western Headwater Mountain Streams](https://americanrivers.org/state-of-the-science-on-restoring-western-headwater-mountain-streams)
(americanrivers.org)
- ❖ **Version 2.0** of the report is now available

Restoring Western Headwater Streams with Low-Tech Process-Based Methods: A Review of the Science and Case Study Results, Challenges, and Opportunities

Version 2.0, January 2024

