

UT Wet Meadow Restoration Webinar Q&A

Q&A for Modules 1 & 2 - Background/Purpose/Inventory

- **Will we have examples on where the transition from sheet flow to channelized is appropriate or desirable? Seems like recognizing those areas would be another piece to inform where to prioritize treatment 'upstream' in the meadows and address detrimental channelization like Shawn was just showing.**
 - Part of reading the landscape is recognizing when you're in a 'depositional' reach vs. a 'transport' reach of a stream system. Imagine a drainage network in a watershed as beads-on-a-string. The beads represent depositional areas where the valley bottom gradient is lower, and sediment typically drops out - this is where our meadows are. The string between beads represents transport reaches where the gradient increases and water/sediment are meant to keep moving through the system - think of a canyon as an example. Sheetflow should be expected in depositional areas, whereas concentrated flow would be expected in transport areas. When we concentrated flow in a depositional area that should be a meadow, this might be a priority to address headcuts/channelization to restore sheet flow.
- **What are the most common things that create/start headcuts in the first place? Is it mainly animal and human disturbance?**
 - Headcuts can be initiated by natural and human-caused disturbance. When the base elevation of the mainstem river/stream in a watershed drops, we often see head cutting up through tributaries as the entire system adjusts to the new base level control. Headcuts are also started when wetland/mesic meadow vegetation is disturbed - allowing the roots to be exposed to air, killing the plants, and opening up fine particle soils to erosion. Overgrazing by livestock, feral horses, and wildlife are common sources of degradation in the west. Hydrologic manipulations, like water diversion, and even long-term drought can also play a role in weakening wetland/mesic meadow vegetation.
- **What success level do these types of structures have on steeper sloped waterways (5%+)? Most of the examples were low gradient waterways.**
 - Jim Spencer, USDA-NRCS - It think it really depends on what you have above the headcut. If the valley bottom is wide above your headcut these structures are effective. if it is a narrow "V" shaped valley, maybe a different type of structure might be more appropriate, such as a BDA. You want to look above your headcut and see what it is you want to protect. Not all erosion is bad.
- **What are typical mistakes you saw and corrected with beginner builders?**
 - In my experience using rock that is too small, and not using enough (length and width). Also building the structure so the water will run down the middle of the structure and not around it.
- **Is there a reference for the +25% increase in productivity? A Science to Solutions publication or similar?**
 - Yes! See:
<https://www.wfw.org/new-science-low-tech-riparian-meadow-restoration-keeps-rangelands-greener-longer/>

- **What success level do these types of structures have on steeper sloped waterways (5%+)? Most of the examples were low gradient waterways.**
 - It really depends on what you have above the headcut. If the valley bottom is wide above your headcut these structures are pretty effective. If it is a narrow "V" shaped valley, maybe a different type of structure might be more appropriate, such as a BDA. You want to look above your headcut and see what it is you want to protect. Not all erosion is bad.

- **What are typical mistakes you saw and corrected with beginner builders?**
 - Using rock that is too small, and not using enough (length and width). Also building the structure so the water will run down the middle of the structure and not around it.
 - Lots of little things. First thing is to help them understand it isn't just a pile of rocks. They are rocks with purpose and have a place. A lot of times they are overbuilt. Also, the footers missing on the one rock dams. Also, project managers need to take the time and help them understand the processes and why we are doing it. Help them care.
 - Also, with zuni bowls, getting the elevation of the rock to the surface and tucked into the soil so it flows over the rocks and not hitting the rocks and falling behind them.

- **I learned about log step-fall headcut treatments recently. Do you have any experience with those? I imagine they might be difficult to utilize in sagebrush areas with no trees or large CWD nearby?**
 - Sometimes there are encroaching juniper trees into wet valley bottoms that could be removed to create log structures really close by.
 - We used juniper on site. Hard part is the trees are twisted and knarly like junipers are so getting them to fit together nicely takes work.

- **How can these techniques be applied to heavily hummocked meadows?**
 - Typically, Zeedyk type structures typically treat headcutting, grade control, and creating sheetflow. Maybe some additional grazing management might be useful like keeping livestock off the meadow too early in the season when the soil is saturated. Or a simple drift fencing?
 - I would imagine if you had some sort of flow at any time in the year the potential for channelization in a hummocked meadow is there.
 - Grazing management would be critical - just not sure a hummocked meadow can restore itself without intervention. It may take some grating.
 - Also, look upstream and see what kind of sediment load potential you have. If you are starved for sediment, you may need to use some other intervention. If there is a good sediment potential you might be able to "induce" erosion somewhere upstream to "feed" your hummocked meadow with sediment to aggrade between the hummocks.

Q&A for Module 3 – Techniques

- **Which direction do you position the "smile"?**
 - Perpendicular to the channel. So, it is a bit higher on the sides than in the middle. Encouraging the water to flow over your structure.
- **How do you calculate an estimated amount of the materials you need for the site?**

- o Height X width X Length / 27= cubic yards. Then pad it a little just for incidentals... :)

Q&A for Module 4 - Planning/Implementation/Monitoring

- **In UT, have folks mostly needed stream alt permits, or nationwide permit 27 for these structures since they may be considered fill within wetlands?**
 - o Depends - some say Stream alt for most projects.
 - o There is an effort underway from BLM headquarters to develop a NEPA CX or categorical exclusion for low tech restoration work like this, but this may still be a year or so out.
- **For 150 years, ranchers in Utah have used runoff for irrigation and stock water. How do you convince them that wet meadows are better than having water downstream for irrigated crops? Is there a way to have a cost benefit analysis done or is this all subjective? I know that if you are a rancher with a pasture downstream and you are no longer getting late season water for your horses because of beaver ponds, you won't be very happy.**
 - o Eric- The more acres of green in late summer the payoff is big to wildlife and livestock in terms of forage productivity and grazing length.
- **Have any of these projects been implemented on properties protected under a conservation easement? Would be curious to hear anyone's experience working within the constraints of an easement.**
 - o Not yet but there are proposed projects that could have easements attached to the land.
 - o Seems like if the easements have wildlife objectives these types of practices would fall within approved practices.
- **Do you usually end up using all the material from your calculated estimation?**
 - o Jim Spencer, USDA-NRCS - In my case, yes, usually because we work with private landowners, we don't want to leave a pile of rock on their property. You could always make a structure slightly bigger or add a new one.

Training Question:

- **Are there any available opportunities to come out into the field and get more hands-on training this summer?**
 - o There are probably several folks on this call who will be building some of these structures this year, I'm sure they would never turn away a willing volunteer... I am not sure where you are or who you work for, but you can contact your regional WRI leadership and ask if there are any Watershed Restoration Initiative projects being implemented in your region. If so, you could look on the database and contact the project manager and inquire.