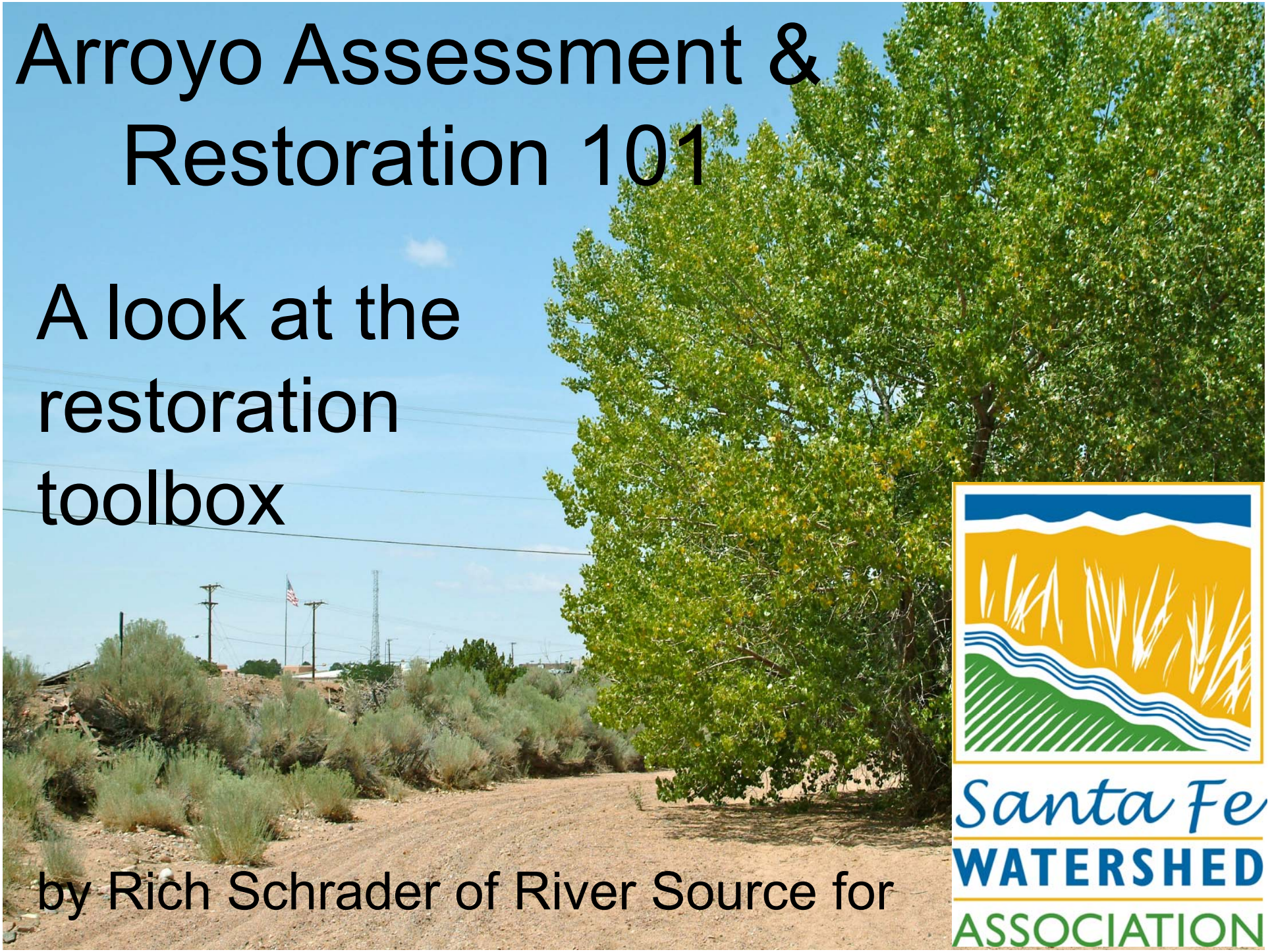
Arroyo Assessment & Restoration 101

A look at the restoration toolbox



by Rich Schrader of River Source for

Santa Fe WATERSHED ASSOCIATION

Adopt-an-Arroyo Program Goals

- Reduce soil erosion
- Protect infrastructure
- Increase aquifer storage/recharge

Why are arroyos important?

- Provide drainage to prevent property damage
- Provide wildlife habitat and corridors for movement of animals

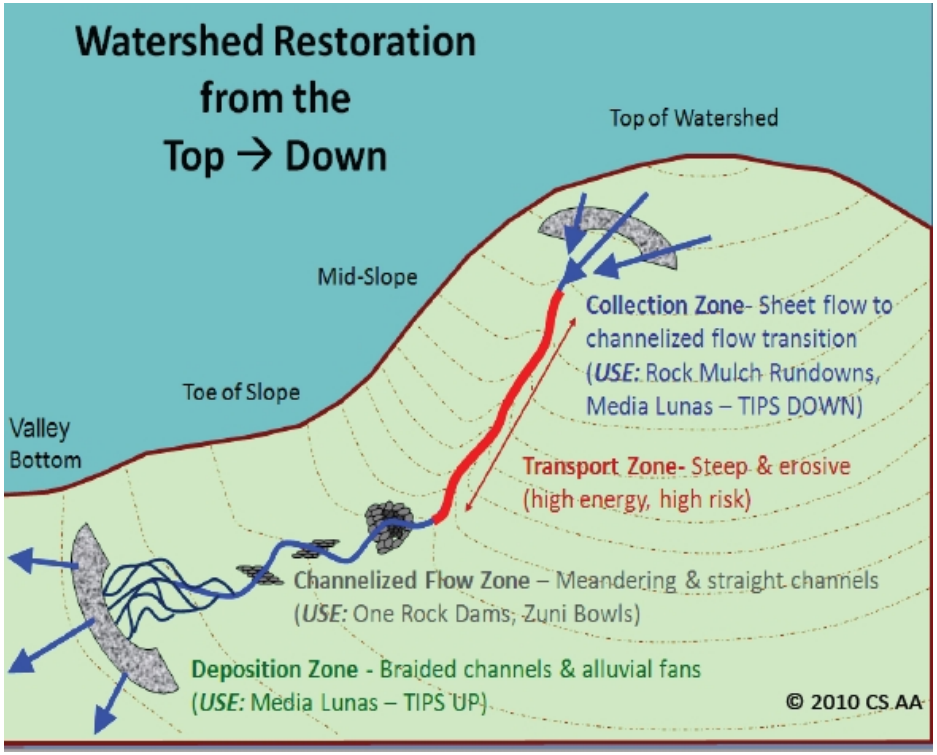
- Offer recreational opportunities
- Create areas for increasing aquifer recharge

Arroyo Assessment – additional resources

- Go to Santa Fe Watershed Assn webpage (http://www.santafewatershed.org/survey123/
  - Download the Survey 123 App for Digital version
  - Get updated versions of the Assessment
    (a work in progress, new versions coming)
  - See copies of the presentations by Rich
  - Check out Arroyo Dynamics and floods on Youtube
  - Who owns the arroyo? City parcel map

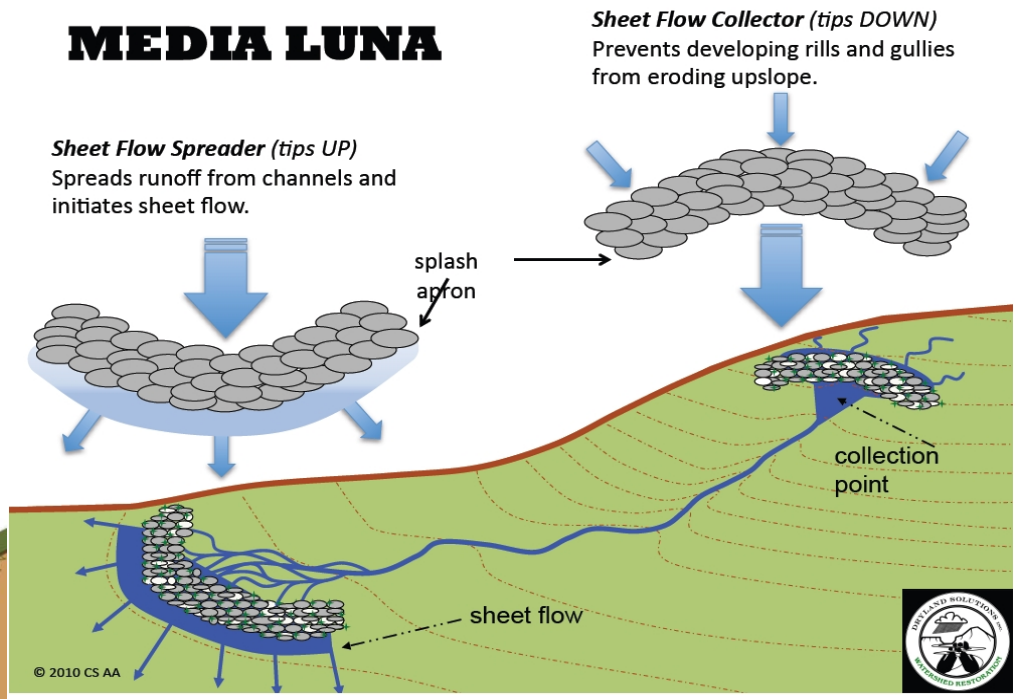
Opening the Restoration Toolbox 101
Guiding Principles

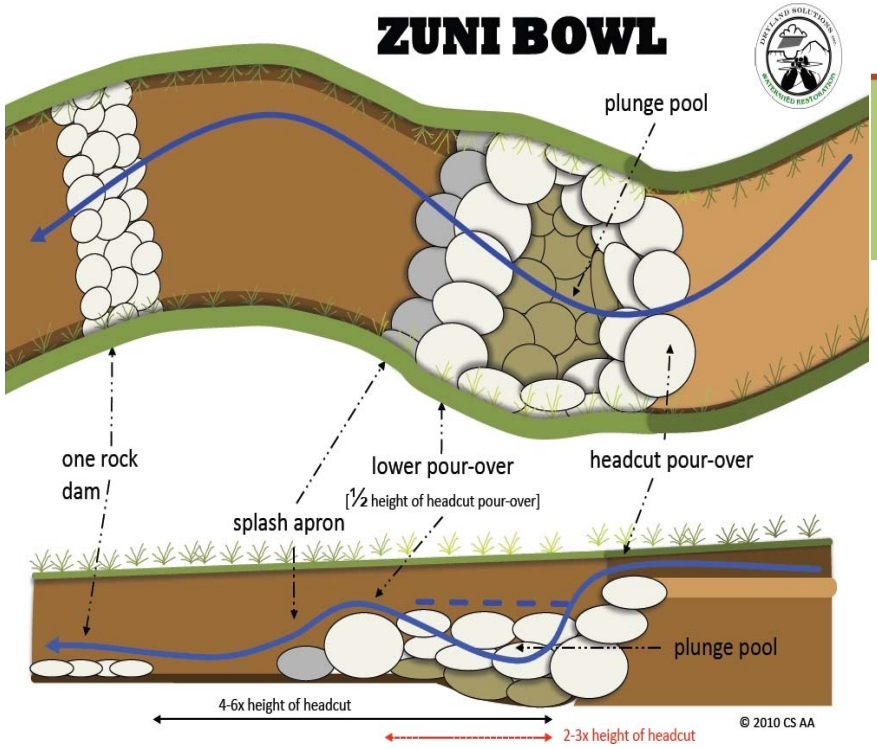
- What are the tools in the Toolbox?
- Where to use the right tools and introduction to how to use them
- Guidance on building simple structures
- Describe Complex structures
- Do No Harm precaution



Upland areas & headcuts

Media Lunas





Zuni bowls & Rock mulch rundown

Media Luna

Designed to manage sheet flow and slow erosion

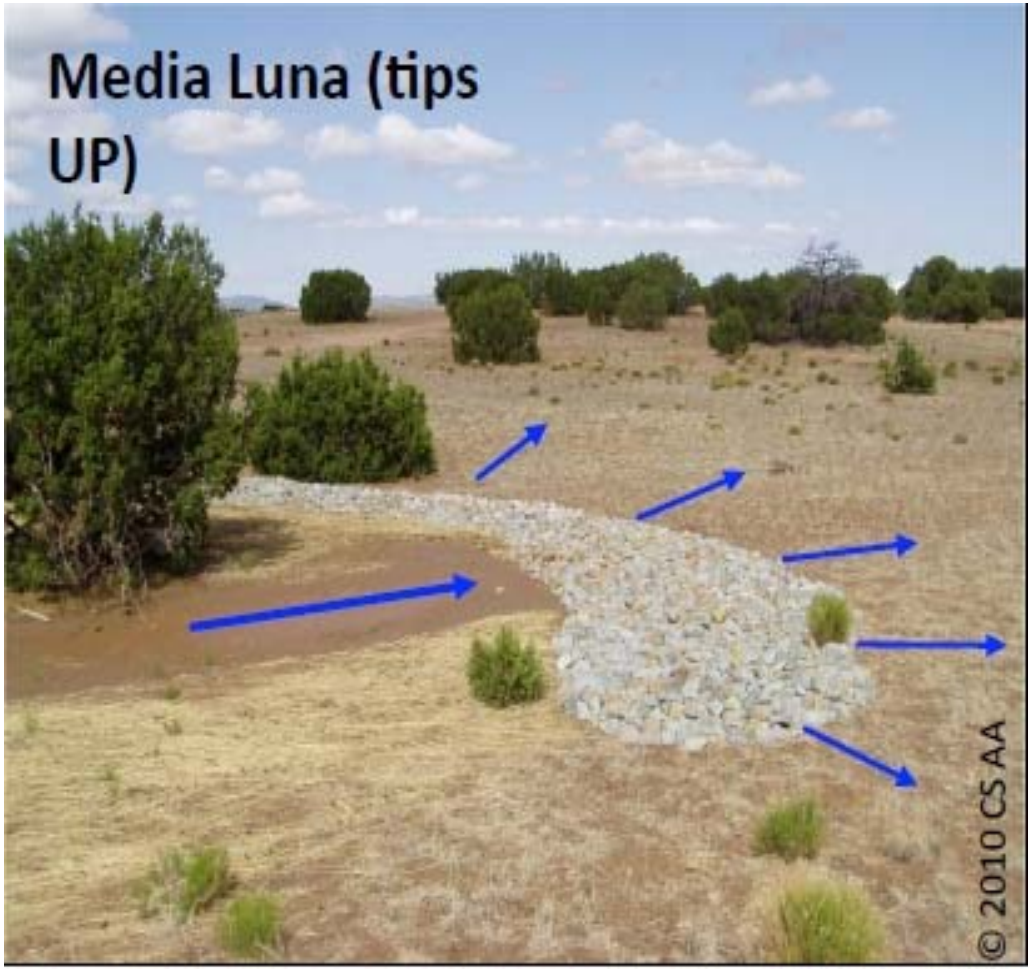
Two types depend on where you build

> Collect sheet flow – tips down

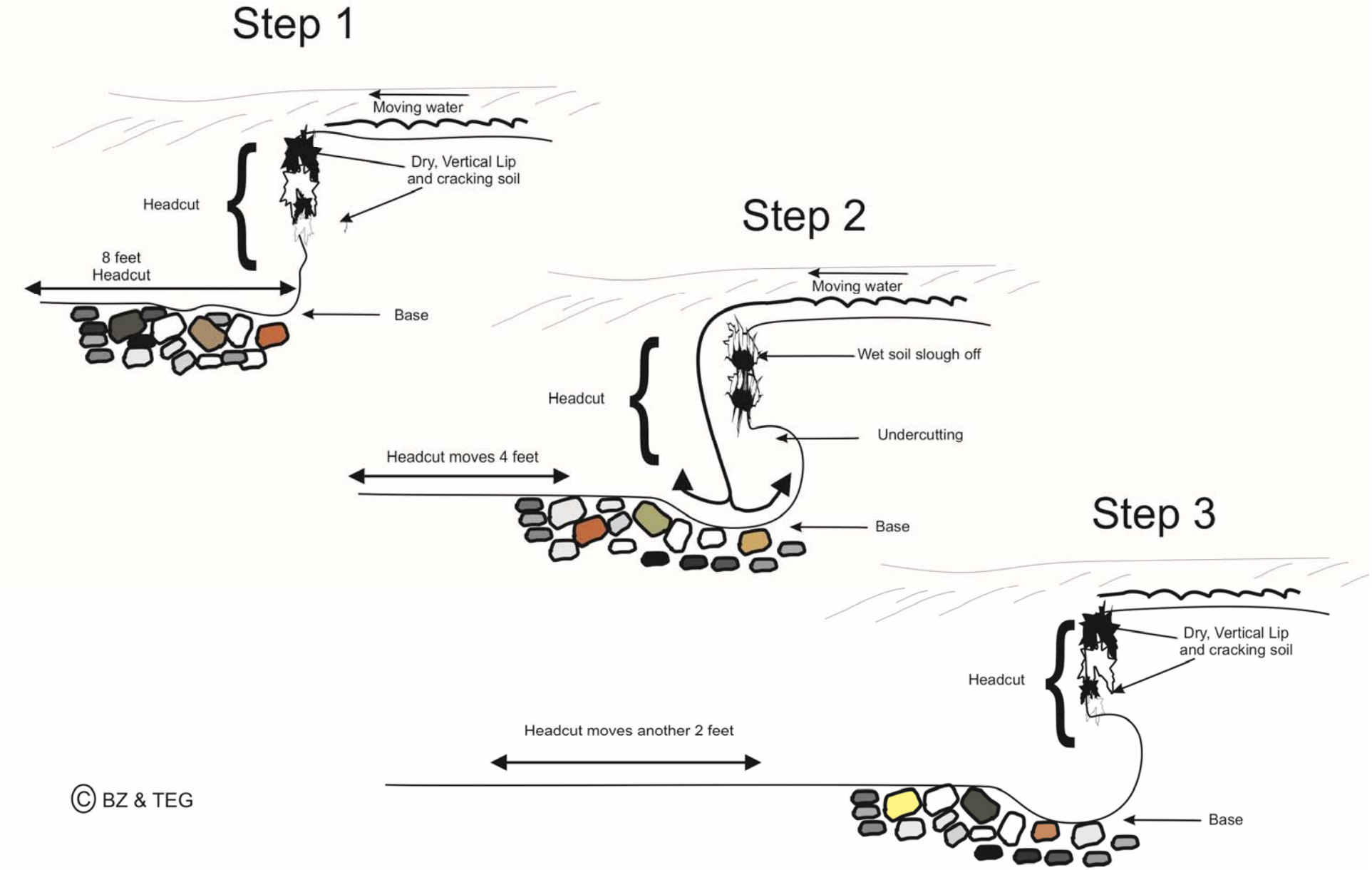
> Spread sheet flow – tips up

Aim to be a band of rocks about 3 feet wide along the contour and as wide as the rills you want to catch

Start at the bottom and build up



How headcuts progress



Zuni Bowl

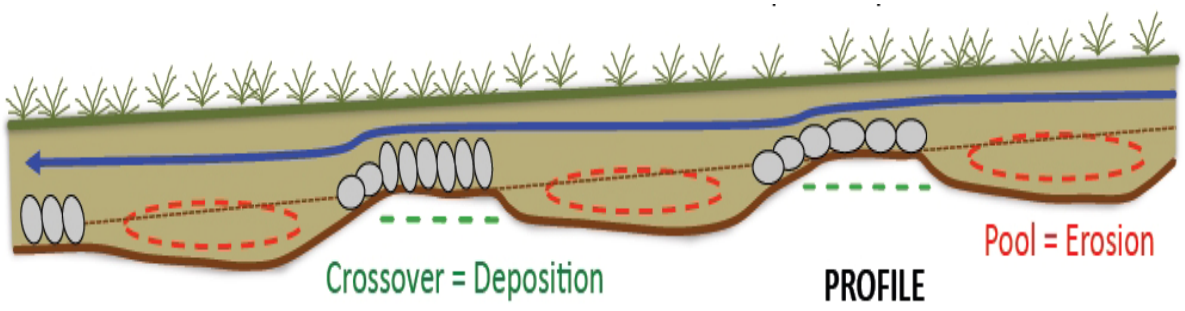
- To control headcuts
- Create splash apron w/large rocks
- Armor bowl with one row of rocks
- Build walls of the bowl until you reach pour over
- Put one rock dam downstream

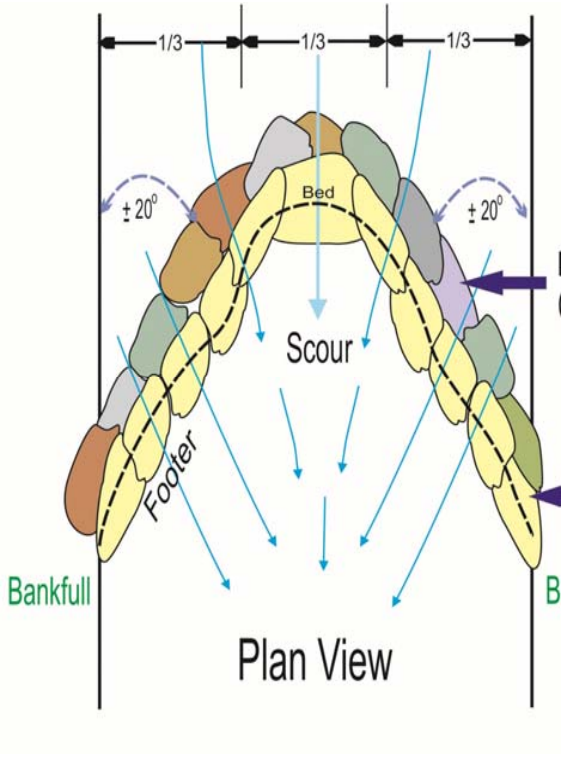
Rock Mulch Rundown

In-channel & Grade Control – Simple & Complex

Goal – prevent bed erosion / degradation

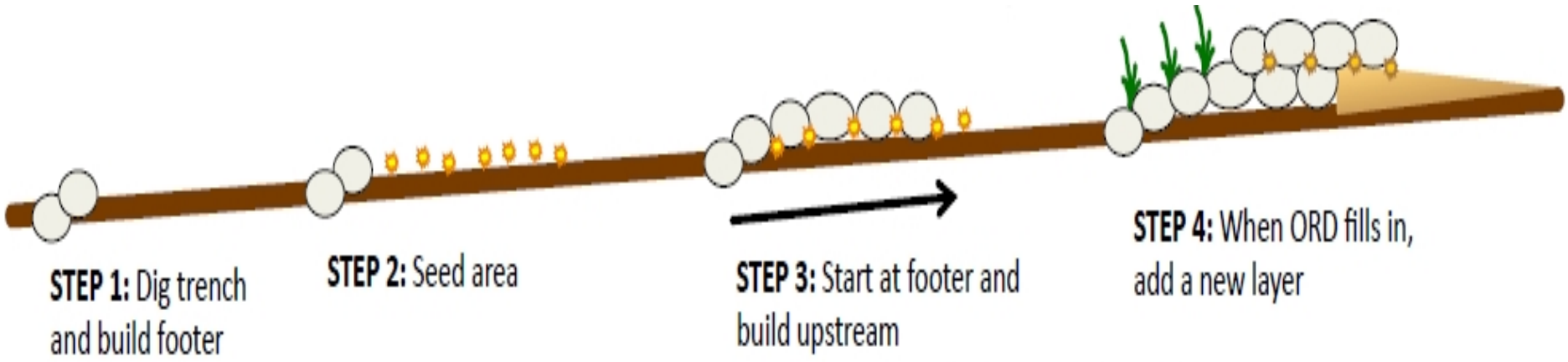
- One-rock dams – fairly simple, scalable to large structures
- Wicker weirs – more complex
- Cross vanes - complex



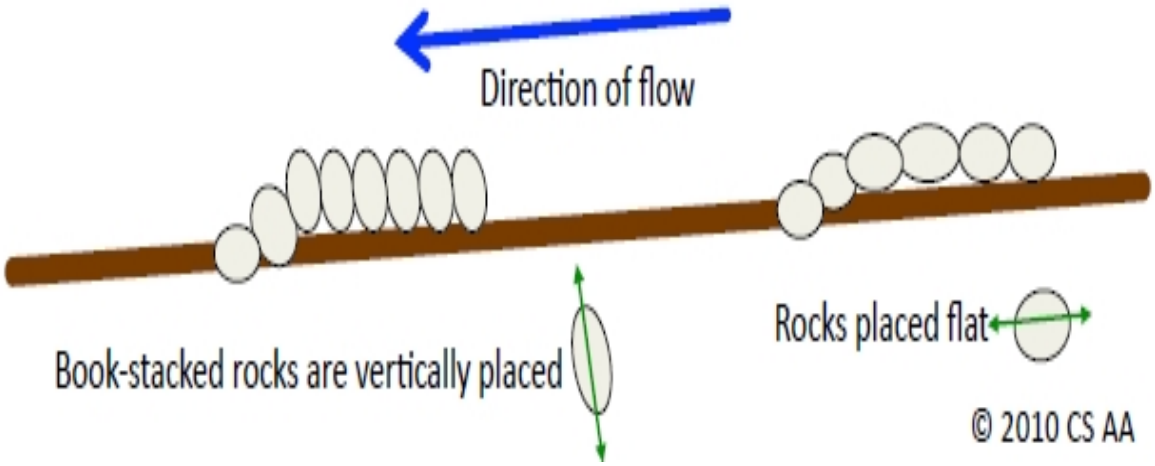


One Rock Dams (ORD)

Low-elevation grade control to slow water, increase roughness, and capture sediment to **gradually** raise bed level over time

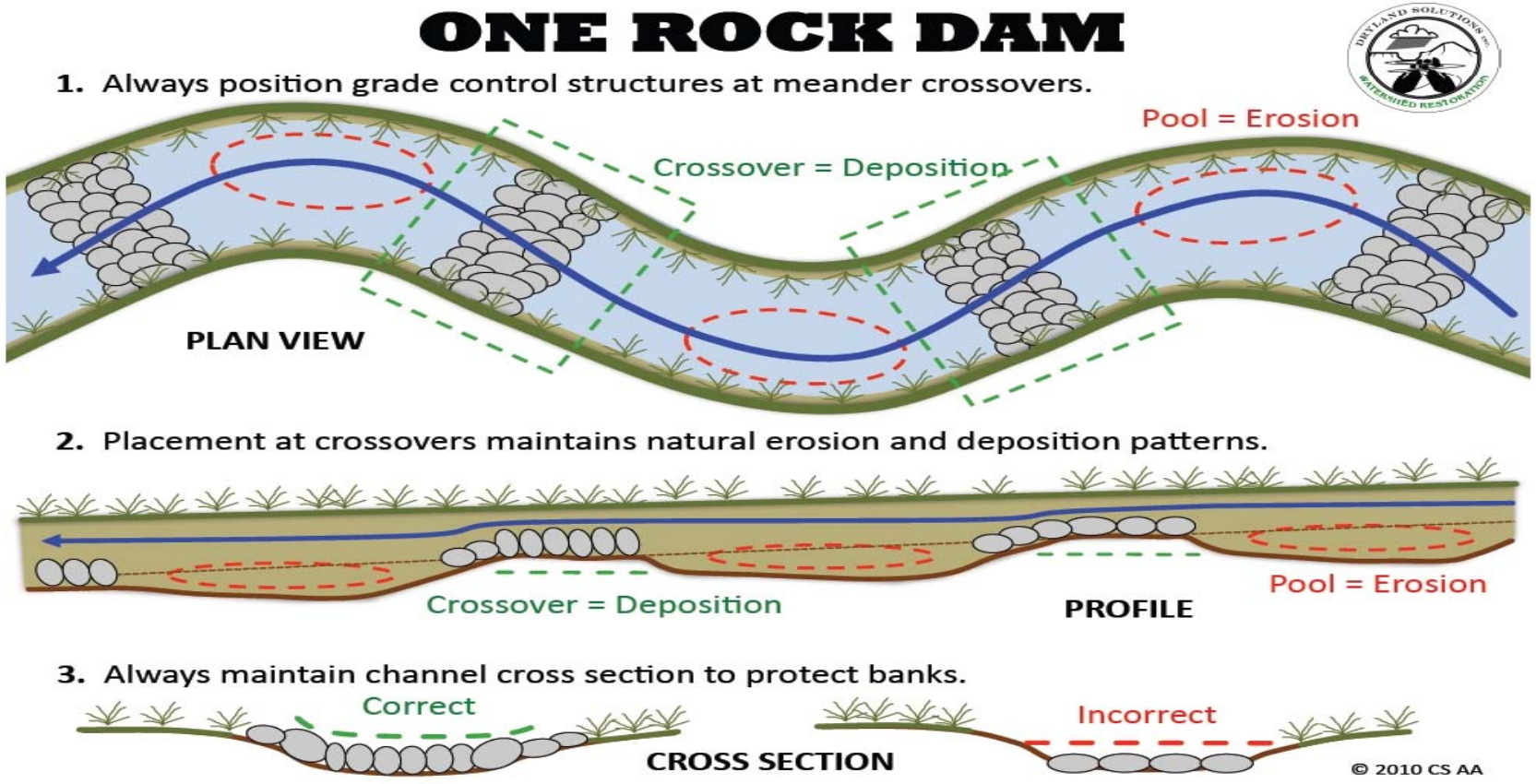


Orientation of Rocks: Placing rocks vertically is called book-stacking, this makes a very strong structure, especially when using small rocks. It is also a good way to make a slightly higher structure.

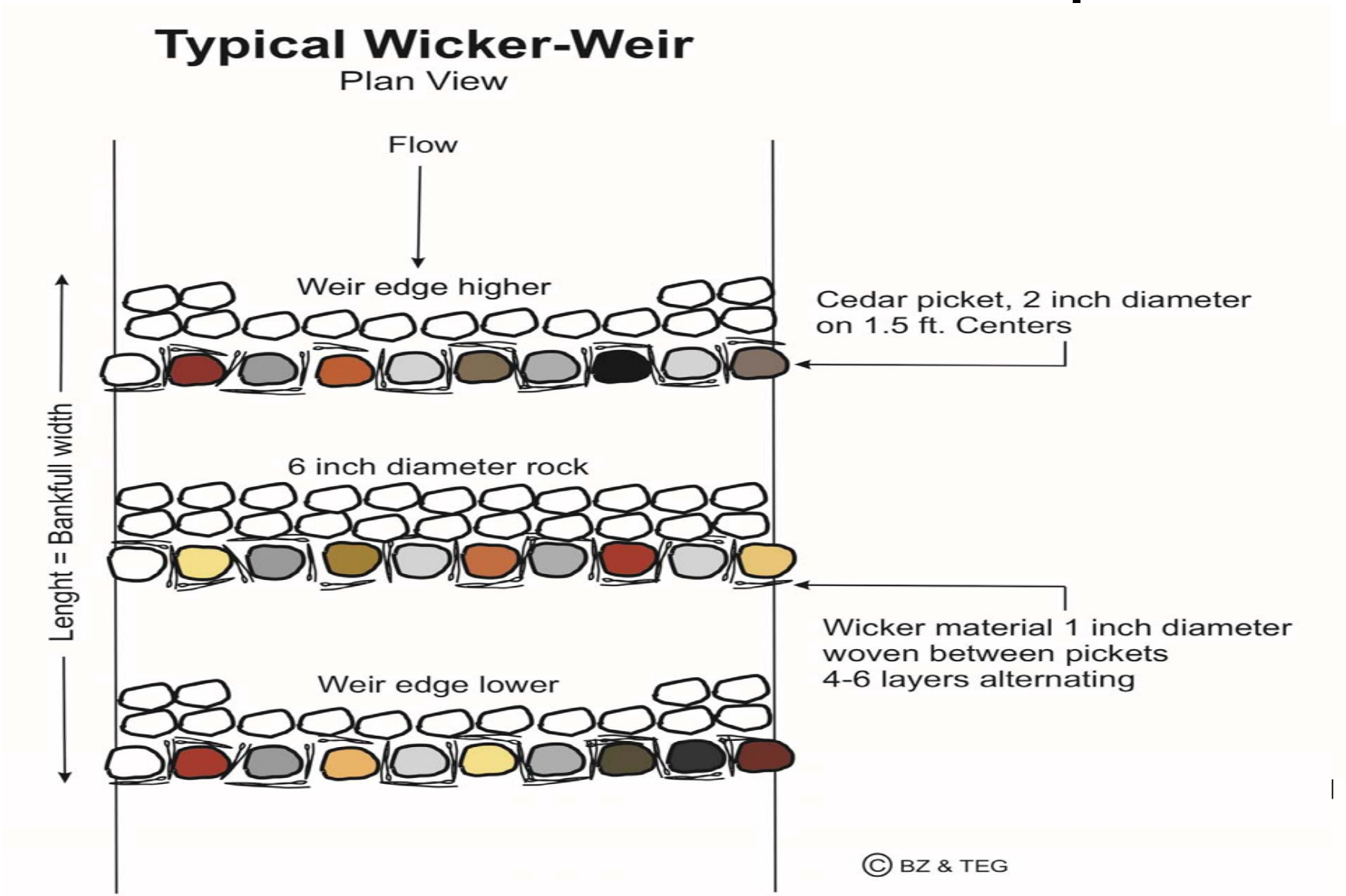


Where and how to build ORD

1. Locate crossover locations between bends
2. Dig downstream footer/splash pad
3. Cast native grass & wildflower seed then lay rocks as if building a rock wall



Wicker weirs - more complex

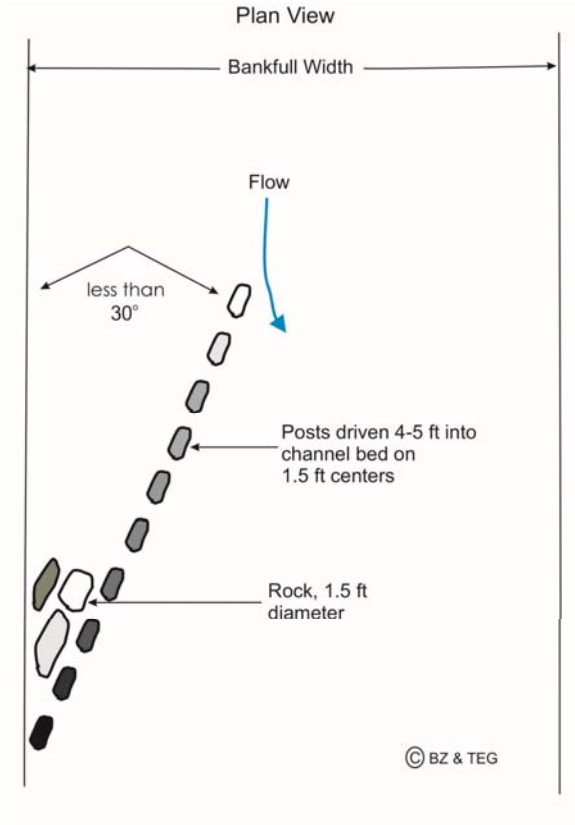


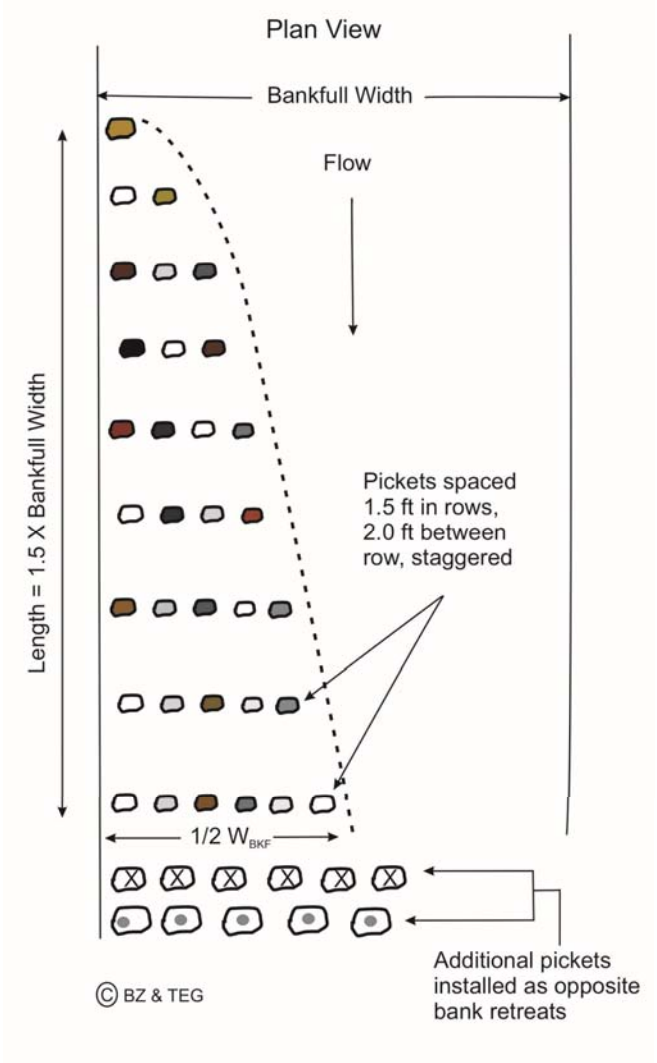
A Wicker Weir on San Felipe Pueblo

Bank Deflectors

Vane – Rock or post - *complex*

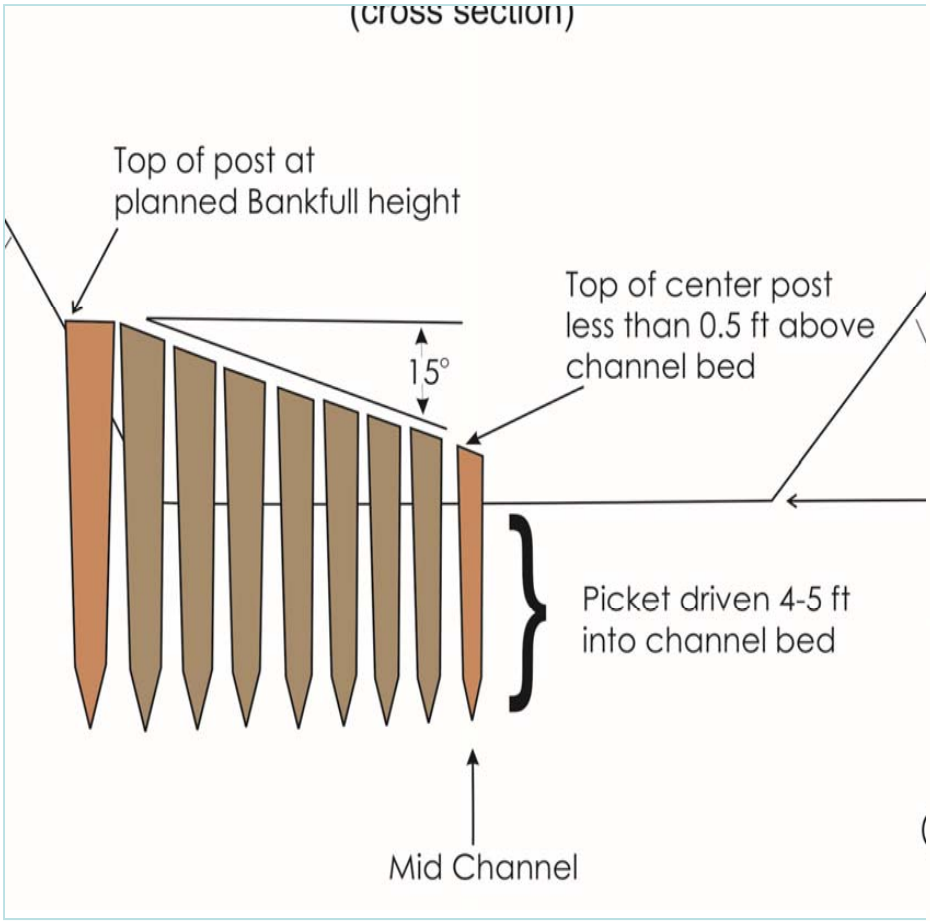
Baffle – *complex*

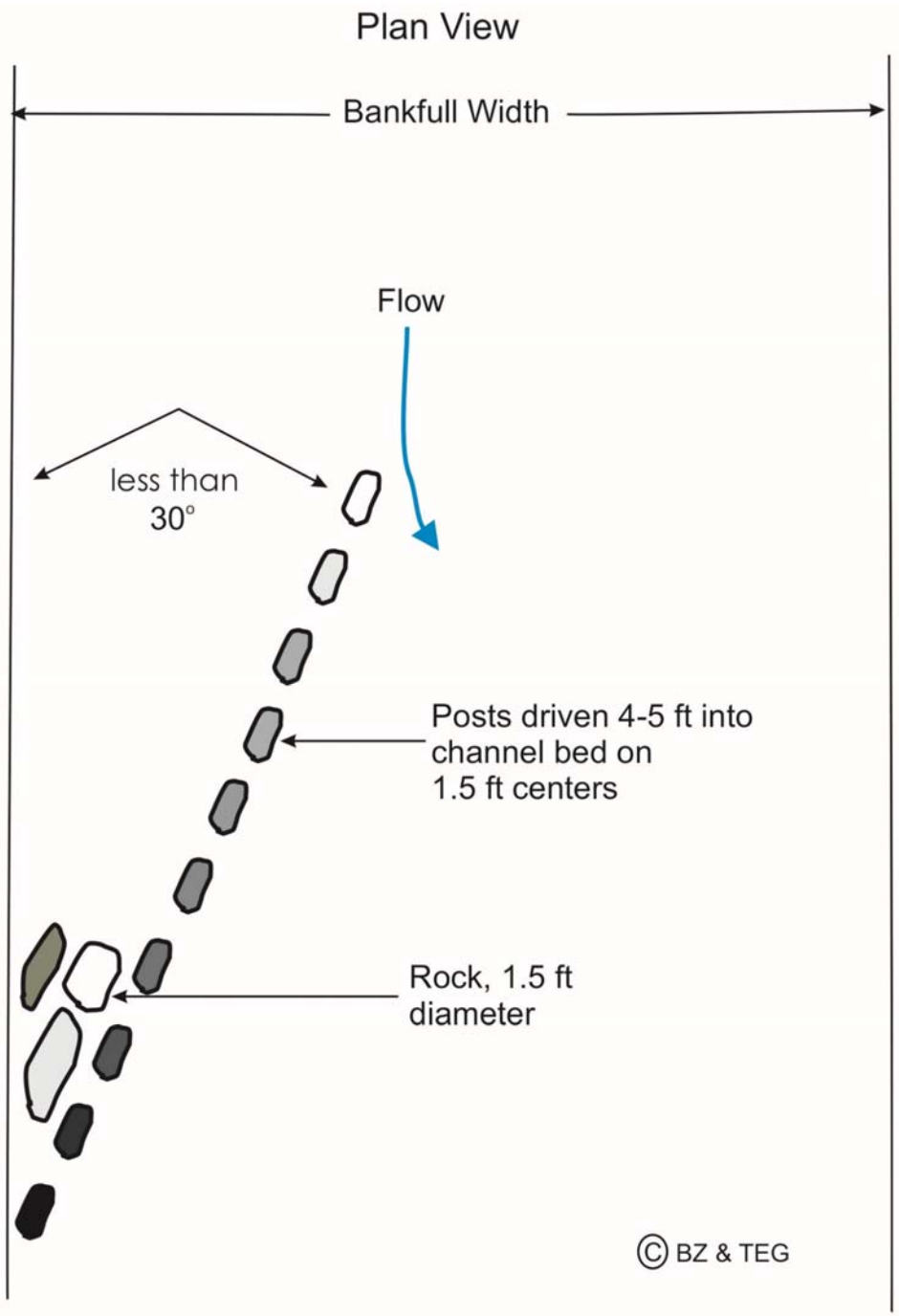




Vane – post or rock

for protecting bank





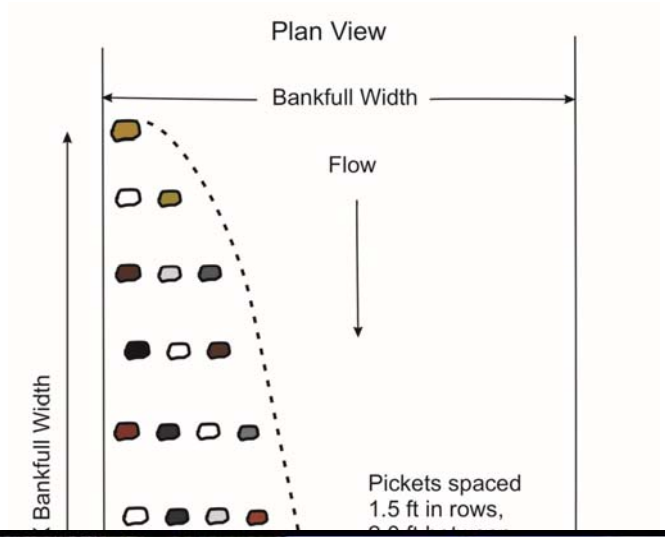
Post vanes

Photos of installation by Keystone Restoration Ecology

Baffles

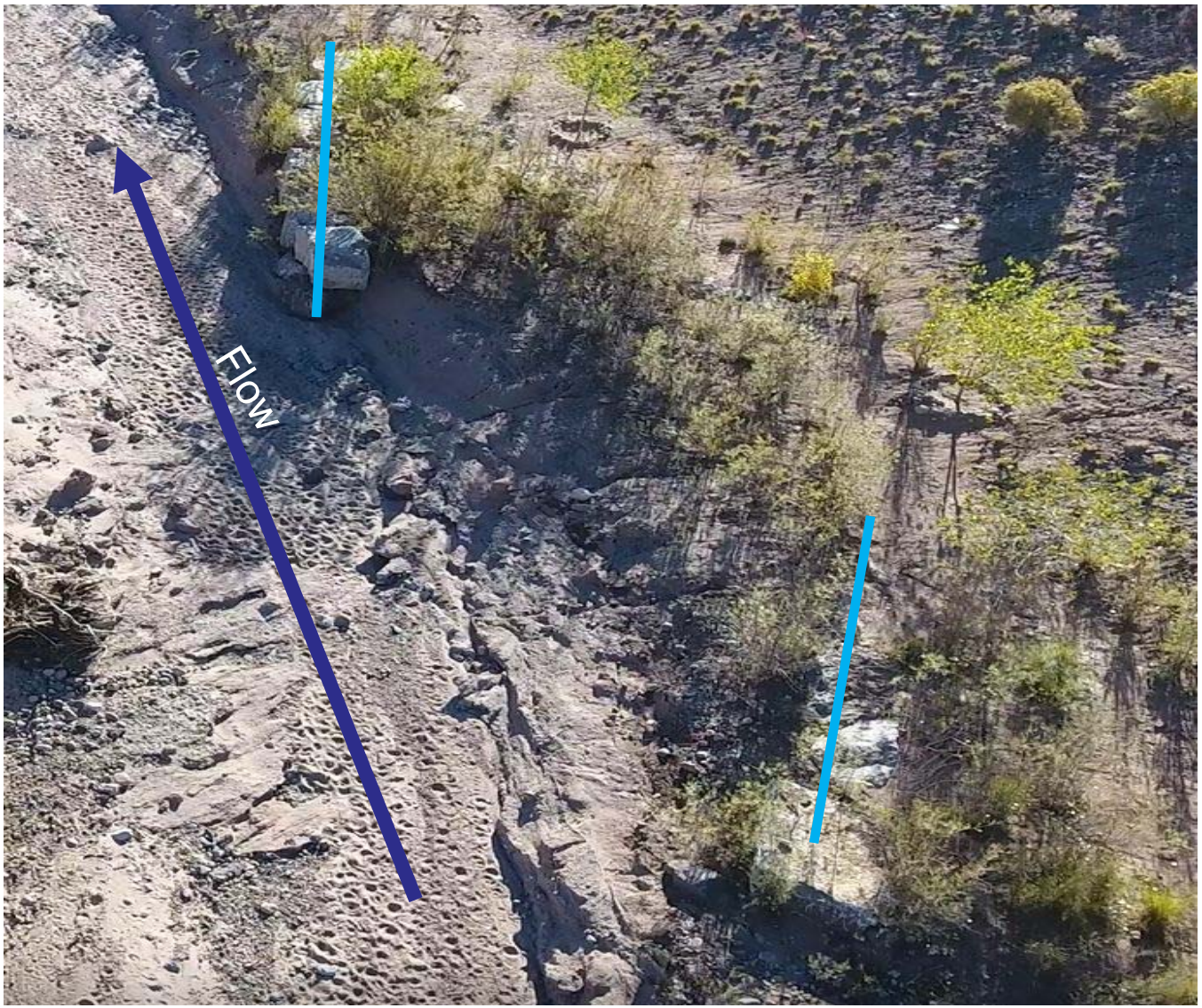
To induce meandering and protect bank

And to create a more sinuous channel



Examples of structures in a large project
a crossvane in SF River

Two vanes in Santa Fe River



Do No Harm (or at least have a net benefit) and monitor and adjust

Thank you!!!

- Resources – http://www.santafewatershed.org/survey123/

Get Your Arroyo Stewadship On!

Santa Fe WATERSHED ASSOCIATION

Resources

- Bill Zeedyk and Van Clothier, *Let the Water Do the Work (2009)*
- Craig Sponholz and Avery Anderson, *Erosion Control Field Guide (2010)*
- Steve Vrooman – Keystone Restoration Ecology - http://www.restoration-ecology.net/
- http://www.santafewatershed.org/survey123/

Scan this to get the link