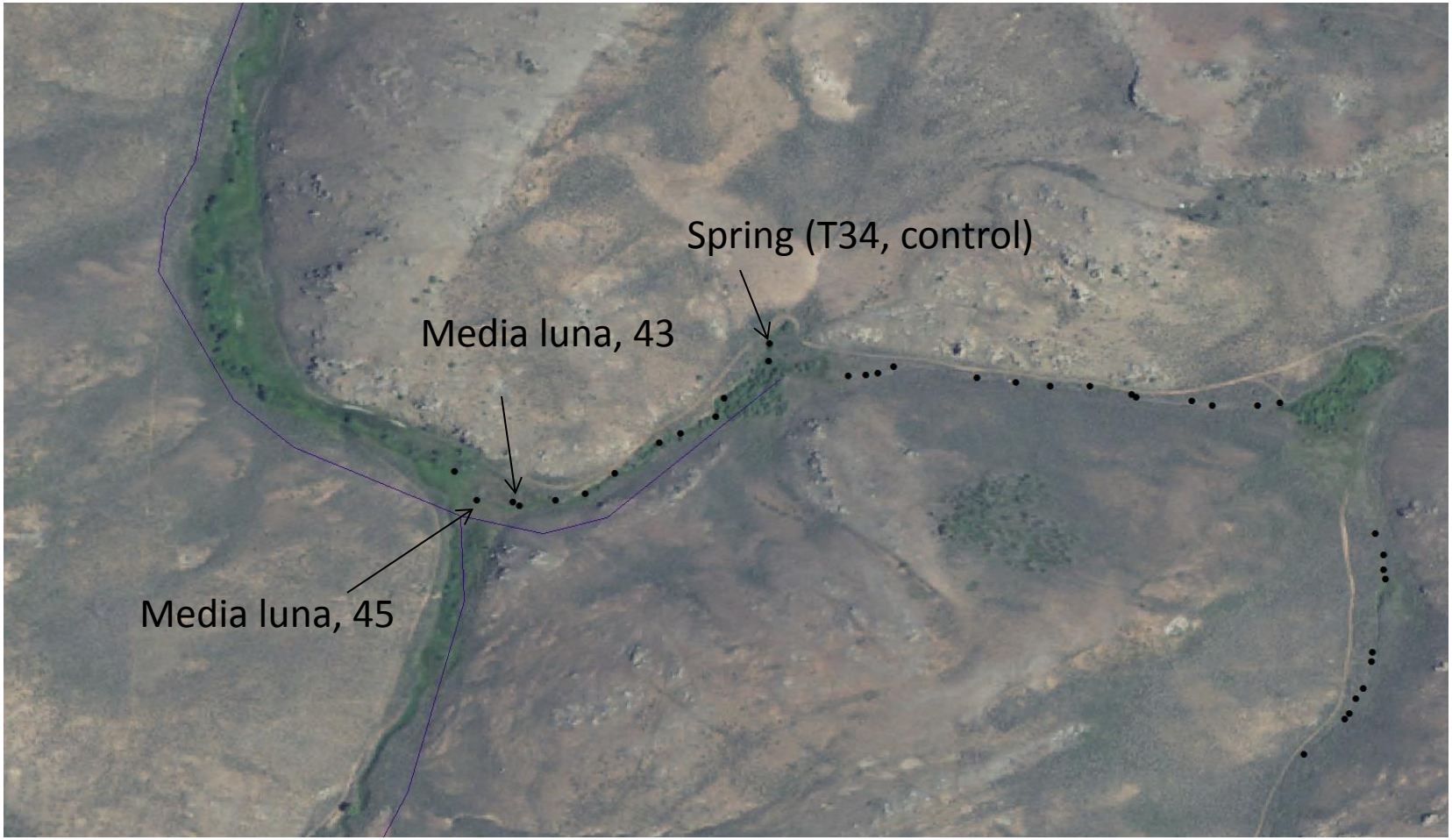
Appendix D: Attachment 1

Wet Meadow Restoration: Changes Over One Year

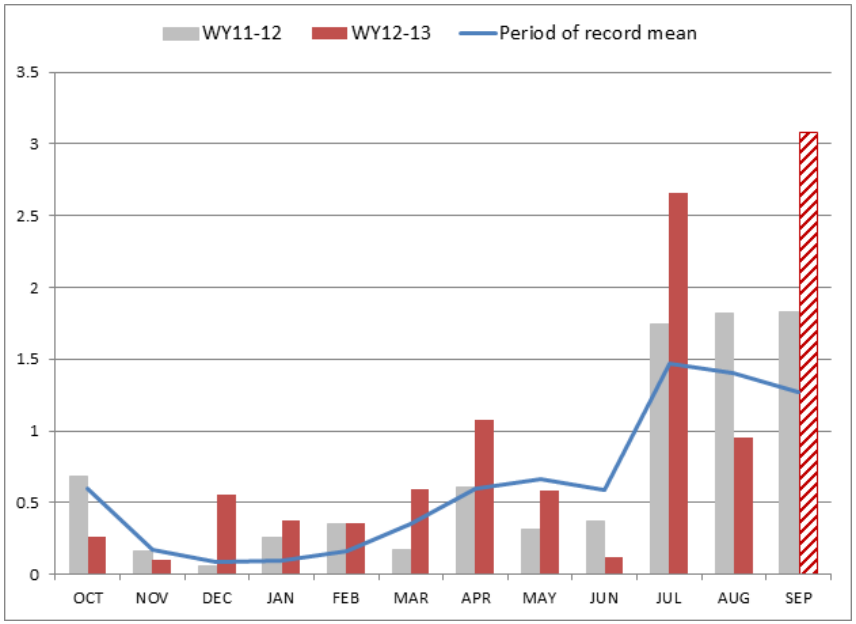
2012 vs 2013

Wolf Creek, Gunnison Basin

Wolf Creek, 2012 Structures



Monthly Precipitation (inches), 2012-2013

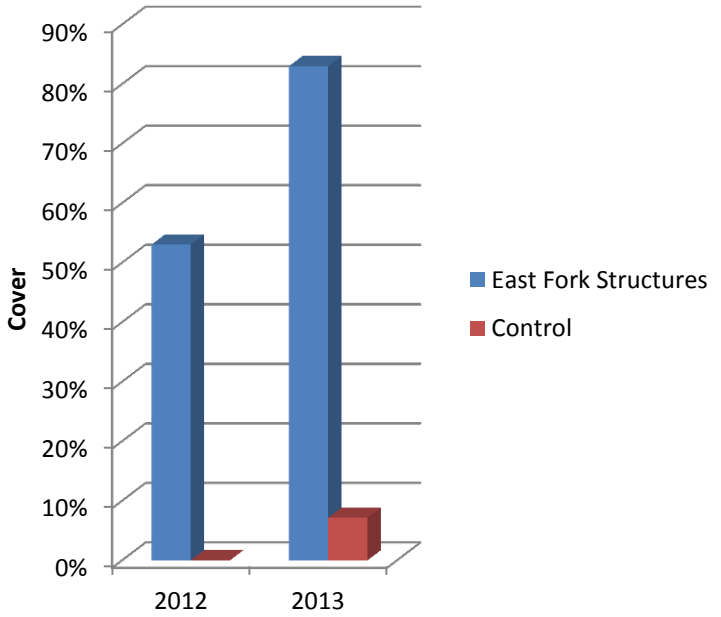


- Data are from Huntsman weather station
- In general, 2012 was considered a drier year than 2013
- Our control transects were established to detect changes associated with precipitation vs. restoration results

Wetland Species Positively Responded to Structures

- The canopy cover of wetland species significantly increased ($P \leq 0.05$) between 2012 and 2013 within the restored areas.
- The canopy cover slightly increased in the control (not restored).

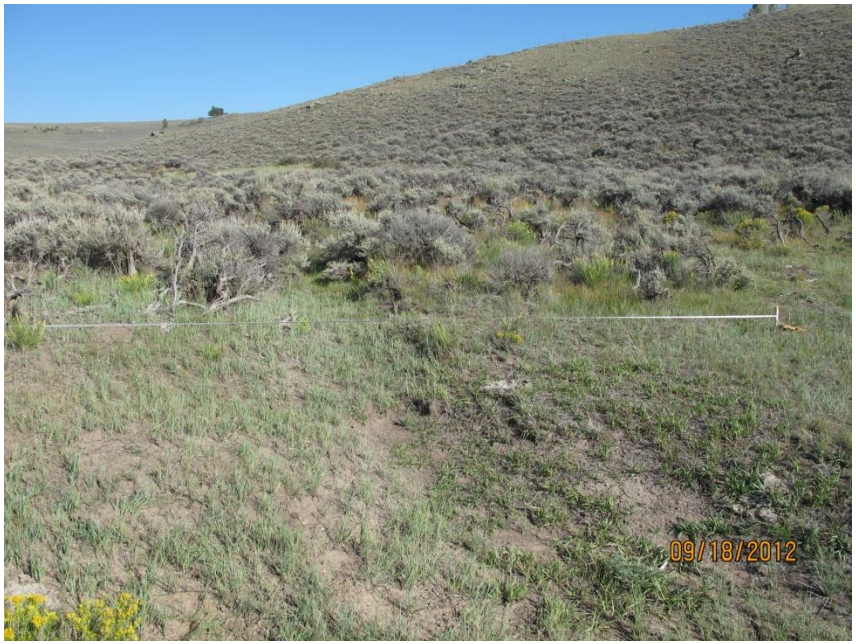
East Fork Wetland Species



Control: no structures built

Note: the new two track visible in the 2013 photo is part of the overall restoration plan. The original two-track bisected a wet meadow and the new two-track is now on the edge of the wet meadow. Transect photo: C01_0m

Control



We can see an increase in cover and height of western wheat grass in the 2013 repeat photo, due to increased precipitation.

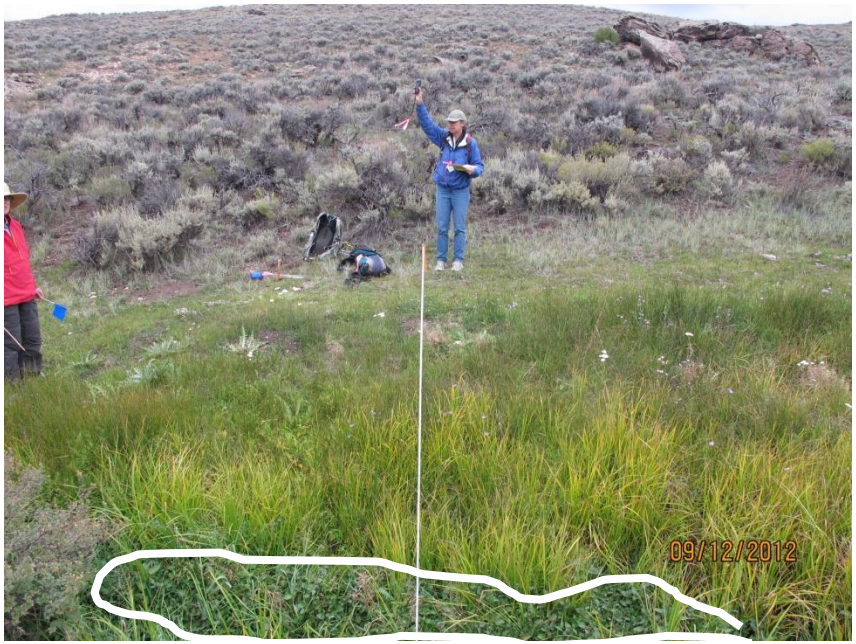
One Rock Dam on Ephemeral Stream, GWT29_0m

By 2013, sediments partially or completely covered many of the rocks. (Use the hammer to help locate the 2012 rocks and compare to the 2013 photo.)

Rock Run Down
GWT38_0m

The white polygon was dominated by *Carex utriculata* in 2012 (left photo) and by *Veronica* in 2013 (right photo); *Veronica* only occurs in running water hence more water in 2013; **wetland obligates went from 35% in 2012 to 50% in 2013.**

Rock Run Down
GWT38_end



The white polygon denotes the Veronica wormskadii area in 2012 (left) vs 2013 (right). At this site, **wetland obligates went from 35% in 2012 to 50% in 2013.**

Media Luna 43

October 2012

August 2013

The media luna was positioned to spread the water across the meadow. By 2013 the water had significantly spread across the meadow into areas that had once been saturated prior to the stream downcutting.

Media Luna, 43

October 2012

August 2013

This media luna spread the water across the meadow within one year of it's placement. Species composition will probably change within a year or two.

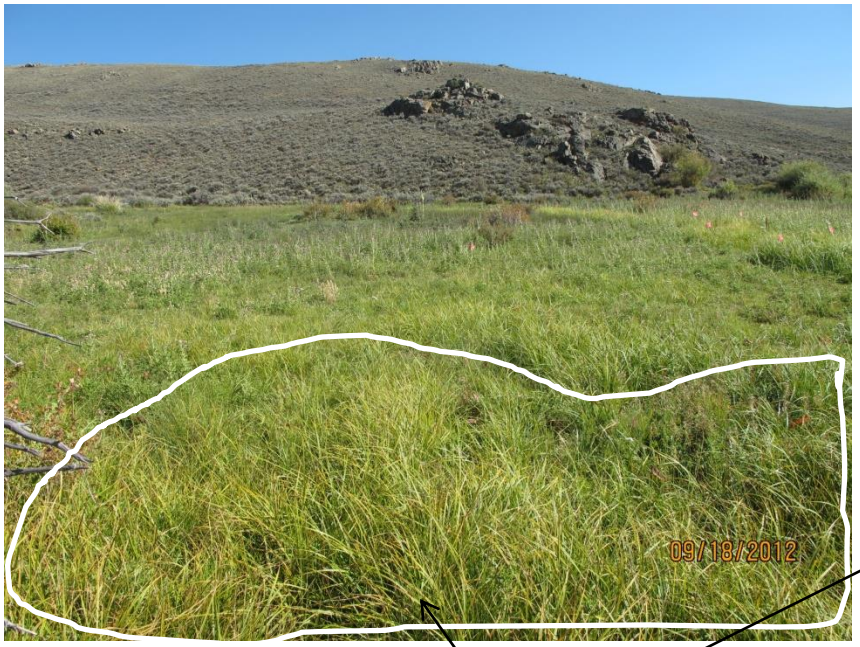
Media Luna, 45

October 2012

August 2013

We documented remarkable changes in the cover and height of the vegetation after one year of building the media luna. Species composition will most likely change within the next year or two.

Downstream of two media lunas, GWT46PP_a



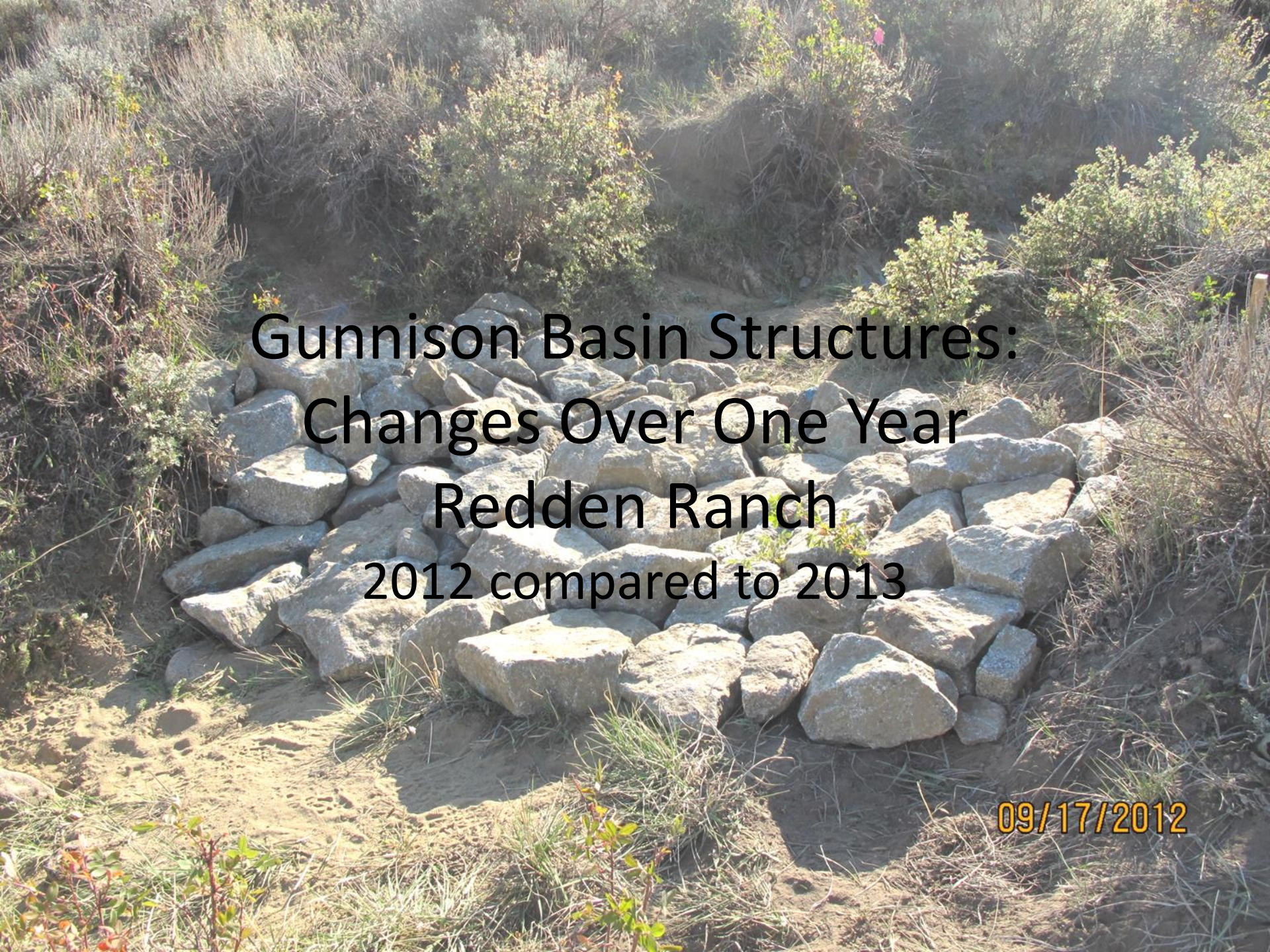
Carex utriculata, an obligate wetland species, expanded into new areas after the media luna was established.

Downstream of two media lunas, GWT46PP_b

Carex utriculata, an obligate wetland species, expanded in area after the media luna was established.

Downstream of two media lunas, GWT46PP_c

In 2012 (left photo) the white polygon was dominated by more xeric species and by 2013, one year after media lunas were established, the area was dominated by *Carex uticulata*, an obligate wetland plant



Gunnison Basin Structures: Changes Over One Year

Redden Ranch

2012 compared to 2013

Control, no structure
GTC02_0m

54% bare ground, liter or rock in 2012

The area within the white polygon is sparsely vegetated in 2012

33% bare ground, liter or rock in 2013

The area within the white polygon has more cover in 2013, due to higher rainfall

Control, no structure
GTC02_end

54% bare ground, liter or rock in 2012

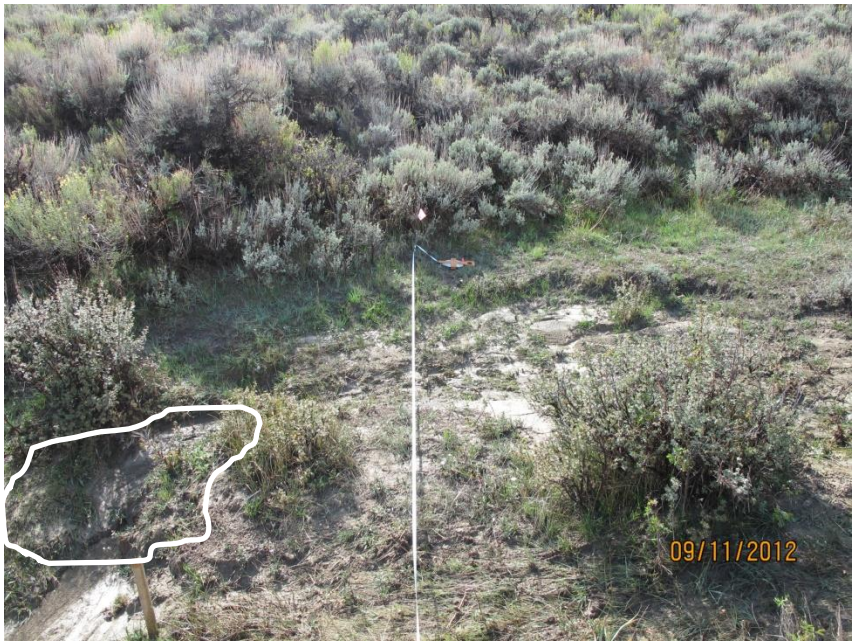
The area within the white polygon was sparsely vegetated in 2012

33% bare ground, liter or rock in 2013

The area within the white polygon is more densely vegetated in 2013, due to more rain

Control, no structure
GTC02PP

One Rock Dam on Ephemeral Stream GRT07_0m



The white polygon denotes the area where the one rock dam will be built

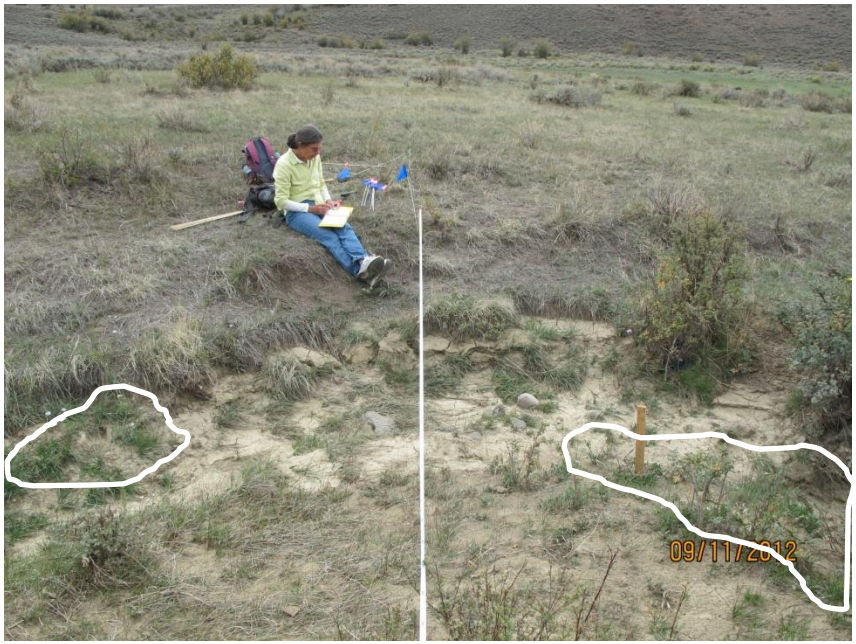
The white polygon represents the area where the one rock dam was built

GRT28_0m

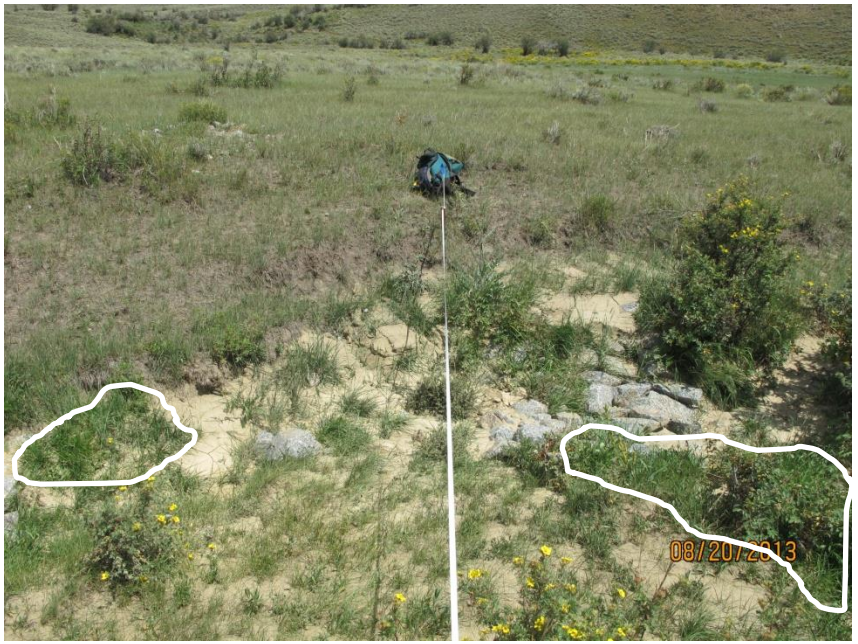
The are within the white polygon will be impacted by the one rock dam that was built shortly after this photo was taken

The area within the white polygon was impacted by the one rock dam

GRT28_end

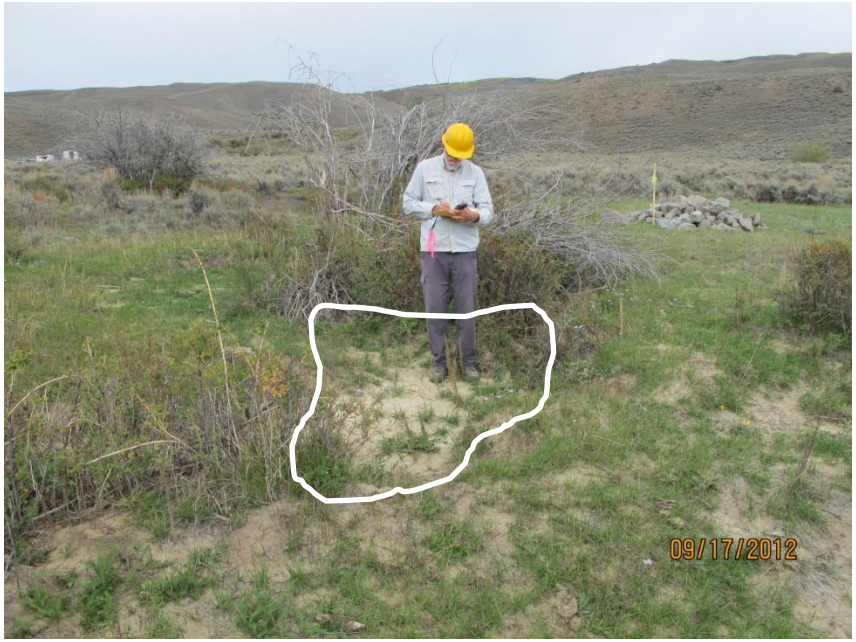


White polygons denote the area that will be impacted by the one rock dam

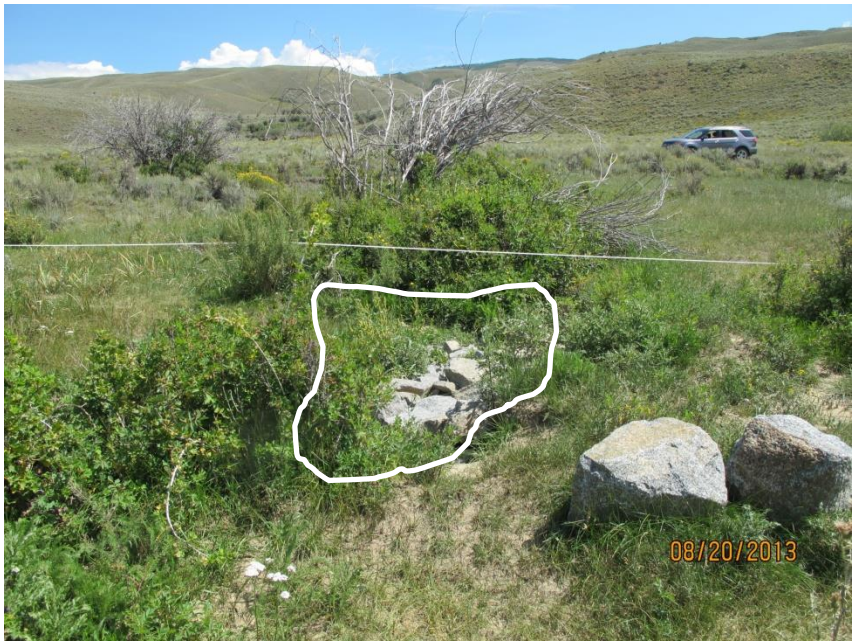


The white polygons denote the area impacted by the one rock dam one year after it was built

GRT46PP

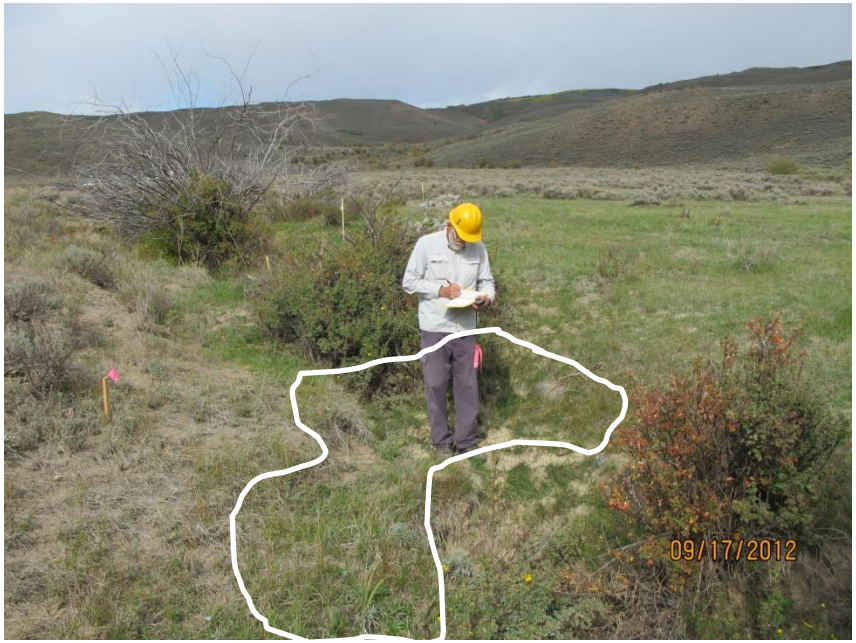


The white polygon denotes the area where the one rock dam was built shortly after this picture was taken



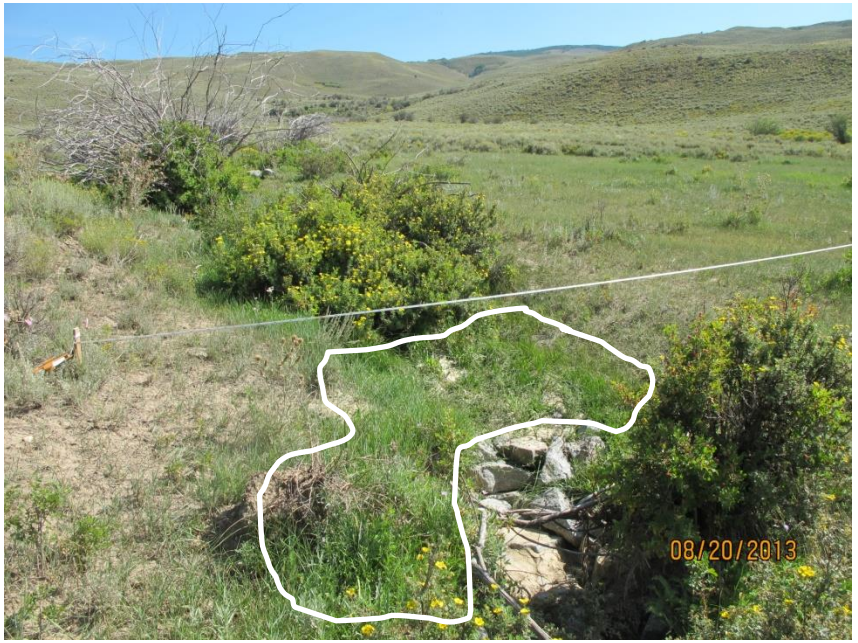
The white polygon denotes the area that was influenced by the one rock dam after one year

One Rock Dam on Ephemeral Stream GRT49PP



Bare ground and litter occupied 41% in 2012

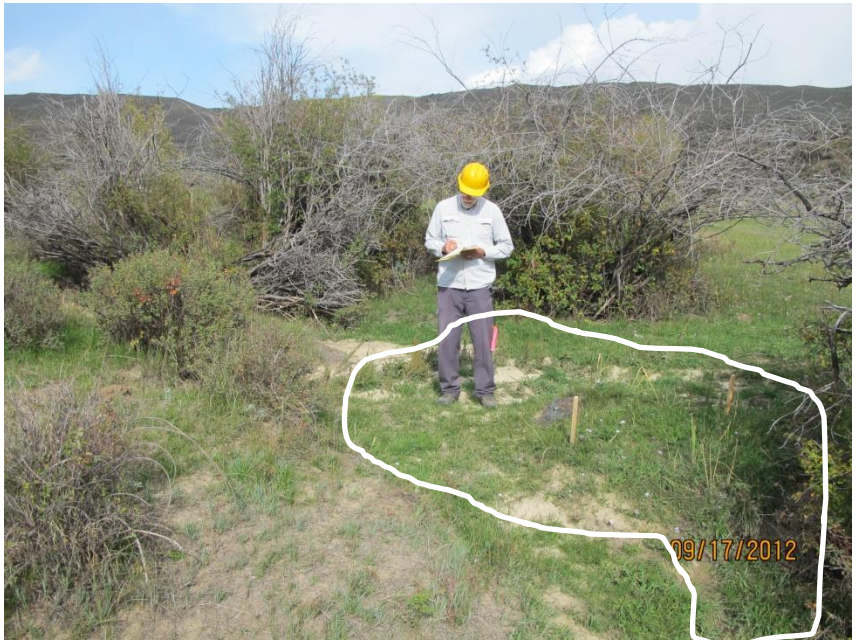
The white polygon represents the area that will be impacted by the one rock dam



Bare ground and litter occupied 6% in 2013

The white polygon represents the area impacted by the one rock dam after one year

One Rock Dam on Ephemeral Stream GRT53PP



The white polygon outlines the floodplain that the one rock dam will influence.

The white polygon outlines the floodplain that the one rock dam influenced after one year.