



# Big Hole Watershed Committee

Monthly Meeting Minutes  
 November 14, 2018 – 6:00pm  
 Divide Grange – Divide, Montana

## In Attendance

Tana Nulph, BHWC; Pedro Marques, BHWC; John Jackson, BVHD County Commissioner/BHWC; Kim Johnston, People and Carnivores; Craig Fellin, Outfitter; Betty Bowler; Tom Bowler; Mark Raffety, Rancher/BHWC; Randy Smith, Rancher/BHWC; Paul Cleary, BHWC; Hans Humbert, Rancher/BHWC; Carly Reach, Montana Tech student; Jacqueline Knutson, Montana Fish, Wildlife and Parks; Jim Dennehy, BSB Water Utility/BHWC; Cody Marxer, Madison County Planning; Zach Owen, BVHD Watershed; Stephen Frazee, Water and Environmental Technologies; Eric Thorson, Sunrise Fly Shop/BHWC; Larry Lynam; Ben LaPorte, BHWC; Steve Luebeck, Sportsman/BHWC; Jim Hagenbarth, Rancher/BHWC; Andy Suenram, BHWC; Dean Peterson, Rancher/BHWC; Mark Kambich, Rancher/BHWC; Erik Kalsta, Rancher/BHWC; Rick Powers, La Marche Creek Ranch; Tyler Powers, LaMarche Creek Ranch; and Roy Morris, GGTU/BHWC.

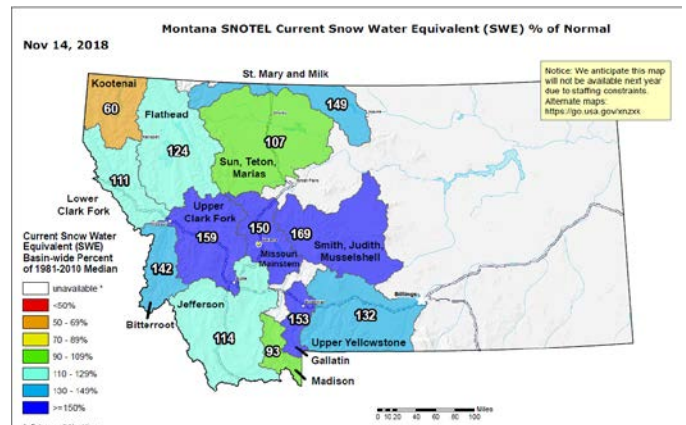
**Introductions** Attendees introduced themselves.

**Meeting Minutes** October 2018 meeting minutes were reviewed, no additions or corrections.

## Reports

### Streamflow/Snowpack Report – Jacqueline Knutson, Montana Fish, Wildlife and Parks

- **Snowpack:** Winter is here and our snowpack is off to a good start. The late October and early November snowfall has put the Jefferson basin at 114% of normal and the Big Hole Basin at 114% of normal for the water year which began on October 1st. These percentages can change quickly this early in the water year and as El Nino conditions begin to arrive in the next month or so I imagine we will see averages start to taper off and dip below our numbers from last year. This time last year we had around double the amount of snow we have this year at most sites but early on I think we're looking good.
- **Streamflows:** Seasonal streamflow gages have stopped reporting flows. Data is still provisional for this past water year but I hope to have statistics for the group in January.
- **Forecast:** We remain in ENSO-neutral conditions which has helped us receive some good early snowpack but El Nino will be arriving soon and forecasters are now giving an El Nino winter an 80% chance of forming in December. The chance that El Nino will continue through the spring of 2019 is forecast at 55%. Although this is predicted to be a weak El Nino event that still means a mild winter in Montana. We will not be able to rely on the snowpack that we had the last two years and we can expect above average temperatures and



Station	elevation	13-Nov	13-Nov	1981-2010	
		2017	2018	median	2018
		inches	inches	inches	% avg
Barker Lakes	8250	6.9	3.8	3	127
Basin Creek	7180	3.3	0.8	1.4	57
Bloody Dick	7600	2.6	1.1	1.4	79
Calvert Creek	6430	1.4	0.6	0.5	120
Darkhorse Lake	8600	7.7	6.7	4.6	146
Moose Creek	6200	1.8	1	1.4	71
Mule Creek	8300	5.6	2.8	2.1	133
Saddle Mtn.	7940	5.9	3	2.9	103
<b>TOTAL</b>		<b>35.2</b>	<b>19.8</b>	<b>17.3</b>	
<b>BASIN AVERAGE %</b>		<b>203</b>	<b>114</b>		

below average precipitation through the winter. The Climate Prediction Center will be issuing its next El Nino update on December 13. It can be accessed here:

[http://www.cpc.ncep.noaa.gov/products/analysis\\_monitoring/enso\\_advisory/ensodisc.shtml](http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/ensodisc.shtml)

- *The three-month outlook:* The current forecast through January 2019 indicates above average temperatures and below average precipitation.

*Steering Committee – Randy Smith, Chairman; Jim Hagenbarth, Vice-Chairman; Steve Luebeck, Treasurer; and Roy Morris, Secretary.*

- The steering committee is happy with the progress BHWC is making.
- Jen has announced her plans to resign as Executive Director of the Big Hole Watershed Committee. The steering committee will ask a few board members to join them for a search committee in the near future.

*Wildlife Report – Jim Hagenbarth, Vice-Chairman and Tana Nulph, Conservation Programs Coordinator*

- On the South side of the Centennials, the Hagenbarths have about 21,000 acres and have lost several calves to grizzly bears In Idaho this year. A range rider rides the allotment. A bear was trapped and relocated out of the area. If ranchers are expected to live with grizzly bears, they need to be able to manage them, which is not possible under the Endangered Species Act. Jim is very unhappy with the results of efforts to try to manage those grizzlies. Ranchers need to know where the bears are, and they need to be able to manage problem bears using collars, hunting, etc. Communication between ranchers and wildlife management agencies is vital in order to manage grizzly bears effectively.
- Grizzly confirmed in Seymour Creek ~2 weeks ago.

*People/Land Use Planning Report – Pedro Marques, Restoration Programs Manager*

- Still planning to do 1 project this winter in the Melrose area
- 2 projects have been pushed back to early spring in the Glen area.
- Funding for this project is basically completely allocated; looking at ways to secure additional funding to extend project into the future.

## **New Business**

- Montana Legislator Ray Shaw, HD71, cosponsored Idaho Power presentation on Cloud Seeding for snow pack. Shaw will introduce a bill to make it a little easier for towns, water districts, commercial businesses, etc. to use cloud seeding. You'll probably hear a lot about that in the future. The eastern part of the state does not like cloud seeding, because North Dakota used to do quite a bit of it to manage hail. This is a different use, intended to manage water supply better for quantity. Idaho uses it a lot and it costs about \$3-5 per acre-foot of water. Only affects about 1% of the moisture the clouds carry. The bill likely won't pass this time around, but this is a good step.

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## **Meeting Topic: Bare Hands and Drones** *Low-tech and high-tech restoration in the Big Hole watershed with a focus on the Mount Haggin uplands*

*Presented by: Pedro Marques, BHWC Restoration Programs Manager*

*Background:* Pedro will provide an update on all of BHWC's restoration projects, with a focus on the use of both low-tech and high-tech innovations in restoration of degraded ecosystems. Our restoration projects rely on the use of cutting edge drone technology for vegetation mapping, delineation, project design and monitoring. At the same time, we rely on the use of locally available materials, primitive and crude techniques that rely on manual labor, and rough construction to achieve dramatic restoration results. These approaches thrive in an adaptive management context that depend on great interdisciplinary teams, intuition, flexibility and creativity at the expense of costly detailed plans.

- Pedro showed new Mount Haggin video. The video will be available to view via <http://bhwc.org> very soon.
- Mount Haggin background:
  - Sources of degradation: small-scale mining: 1884-1920s
  - Aerial emissions: In 1907, 27 MT's of As, Cu, Pb, S, and Zn were released from the smelter daily. 528 in 1978.
  - Flume construction: late 1800s
  - Past the ecologic tipping point:
    - Loss of 6-18" of forest soil – most organics and water holding capacity gone
    - Friable mineral soil of volcanic welded tuff
    - Seed sources few and far between
    - Extreme summer, winter climate and wind erosion, low decomposition
    - Loss of most natural grade controls and riparian buffer = sediment superhighways
    - Incised stream channels
    - Big Hole landowners: California Creek “ran white” (from the sediment flow)
    - Pedro dug down as far as he could manage manually to see if there were soil levels and there were not
- Framework for remediation/restoration
  - Mt Haggin Uplands (RDU 15)
    - Engineered prescription:
      - Plant trees
      - Treat weeds
      - Build engineered sediment detention ponds at bottom of all tributaries
    - MT FWP Landowner Objectives:
      - Long-term stewardship and habitat improvement
      - Long-term maintenance considerations
      - Roadless area and WMA Character
      - Demonstration projects (2012-2016)
    - NRDP Restoration Focus:
    - Natural sediment detention/retention ponds
      - Created by beavers
      - Studies conducted to look at flood attenuation of beaver dams. Hydrographs show an immediate drop in water levels after beaver dams are breached; beaver repairs dam within 3 hours of breach and water levels bounced back up. BUT you can't use beavers as an actually engineering strategy, because their movement and activity are too random/not dependable.
    - Conceptual plan and design principles:
      - Create more catchment than proposed sediment ponds with less long-term maintenance and more ecological resilience.
      - Pedro recently completed a report outlining this plan to guide future restoration activities.
      - Iterative and adaptive approach.
      - Mimic natural recovery processes.
      - Using drone technology to inform planning & design, measure success, and share our work.
      - Capture and hold sediment on landscape.
        - Uplands: grow grass, forbs
          - NPK fertilizer trial – 2013
          - Organic fertilizer trials – 2014

- Demonstration project: scaled up 2014 fertilizer trial



**2014**



**2017**

- Worked with Water and Environmental Technologies (WET) to assess percentage and types of vegetation coverage
  - Gullies: capture sediment
    - Built rock walls by hand
    - 2015:
      - Slash and anchored brush bundles hold soil in place
      - Plants begin to establish from local seed sources
      - Measuring sediment capture
    - 2018?
      - Built engineered catch dams at Joyner Gulch. Not an easy place to get to – 2 operators hired by George Rabel Excavation, Inc. built check structures on extremely steep slopes. The operators’ high skill level allowed us to get a lot done – more than planned even. Bulldozer operator finished 6 weeks of planned work in 1 week, allowing time for additional work to be completed.
  - Riparian: Slow the water, connect floodplain

- Pedro is teaching a restoration course at the University of Montana – brought graduate students & Montana Conservation Corps crew to create beaver mimicry structures in the North Fork of California Creek to retain sediment & reconnect the stream to its floodplain.



**Before beaver mimicry structures installed**



**After beaver mimicry structures installed**

- Spreader dikes helped convert areas where conifer has encroached back into more of a wetland area.
- Working to measure sediment catchment throughout basin.
- Projects:
  - East Fork Divide Creek – repairing busted-out beaver dams to store water & catch sediment
  - Lower French Creek – built new stretch of stream channel to relocate stream away from terrace. Created new wetlands.
  - Oregon Creek – expanding wetlands
- Initial findings and further work:
  - Project costs greatly reduced by utilizing on-site materials
  - Reduced annual costs promote longer-term and iterative project approach
  - Young people want to work with their hands – creativity and empowerment
  - Video drones for funders, public, and as construction pre-bid orientation
  - Survey drones leading to cost savings and collaborative design processes
    - Topo
    - Wetland delineation
    - Vegetation cover and change over time
    - Water storage
    - Sediment catchment

- *Discussion:*
  - *Who's designing your vegetation (seed) mix?*
    - *Started with Stuart Jennings and Reclamation Research Group. Now Robert Pal at Montana Tech.*
      - *Are they all native?*
        - *Yes, blue-bunch wheatgrass, Nevada bluegrass, slender wheatgrass, western yarrow, and silver lupine.*
          - *Have you ever considered using the Forest Range Research Center out of Logan, Utah?*
            - *I've thought about it, but I've really gone to using native seed sources – I've looked at mixing in forbs, but it's really expensive to do.*
  - *On your dozer pits, are you using any level for those or is it just operator eyeball?*
    - *Eyeball.*
  - *On your fertilizer mix you chose to move to organic. Why and what is your nitrogen content?*
    - *It's turkey processing by-product. I'd have to give you the spec sheet on what the actual Nitrogen content is. We've done organic and NPK fertilizer side-by-side. The NPK doesn't have any micronutrients in it, and I think that is a real limiting factor. Without Manganese and Boron and other stuff like that, I suspect that's why the organic fertilizer is working better. I suspect once we get some vegetation growing, an annual NPK drop might be a good thing to do.*
      - *What is the price difference on those?*
        - *Sustain (the organic fertilizer) is substantially more expensive than the NPK.*
    - *What were your soil chemistry tests prior to fertilization?*
      - *They were all very low, especially Nitrogen. Organic content was in the 0.1 range. Phosphorous was high. We have a PhD student at UM doing a detailed study of the soil chemistry, and I hope to have those results soon to tease out what is actually helping the plants grow. But for now, we have to move forward when we can.*

### **Upcoming Meetings**

- BHC does not meet in December.
- 2019 meeting dates to be announced.

### **Adjourn**