



Big Hole Watershed Committee

Monthly Meeting Minutes

February 19, 2025 – 6:00 pm at the Divide Grange
Zoom option also provided

In Attendance

In-person: Kim Giannone BHWC/UMW; Tom Bowler, Butte Resident; Betty Bowler, Butte Resident; Jim Hagenbarth, Rancher/BHWC; Diane Hutton, Resident/BHWC; Dean Peterson, Rancher/BHWC; Peter Frick, Rancher/BHWC; Brett Marshall, RCC; Chris Edgington, MTU; Kaitlin Boren, DNRC; Roy Morris, GGTU/BHWC; Jenna Dohman, MBMG; Luke Lutz, FWP; Craig Fellin, Big Hole Lodge, Andy Bobst, MBMG; Arica Crootof and 16 students, UMW; Jim Keenar, Butte Resident; Ryan Welty, Polaris Resident

Zoom: Pedro Marques, BHWC, Abbie Ebert, MT DEQ,, Ben LaPorte, Trout Unlimited, Darrin Kron, DEQ; Niah Brass, CVA; Jon Kirkley

Meeting Minutes

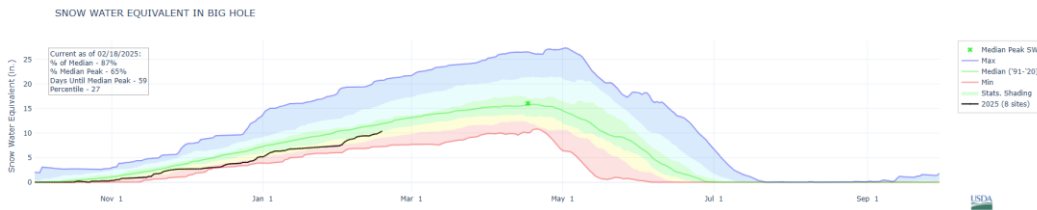
BHWC monthly meetings are held at the Divide Grange with a virtual (Zoom) option provided thanks to Southern Montana Telephone Company, who donated the internet service. Meeting minutes and recordings are available at <https://bhwc.org/monthly-meetings/> (scroll down for meeting minutes archive). Printed copies are available during in-person meetings. Contact Tana Lynch, BHWC Associate Director, at tlynch@bhwc.org or (406) 267-3421 to suggest additions or corrections.

Reports

Streamflow and Snowpack Report – Kaitlin Boren, Department of Natural Resources and Conservation

- *Streamflows: (February 2025):*
 - Wisdom (06024450): Seasonal
 - Mudd Creek (06024540): Seasonal
 - Big Hole River near Wise River (41D 08000): Seasonal
 - Maiden Rock (06025250): Seasonal
 - Melrose (06025500): Seasonal
 - Glen (06026210): Seasonal
 - Hamilton Ditch (06026420): Seasonal
 - Stream And Gage Explorer (StAGE): <https://gis.dnrc.mt.gov/apps/stage/>
- *Precipitation:* 86% of Median for Snowtel Sites (1991-2020)
- *Snow Water Equivalent:* WY 2025 87% Median (1991-2020)
- *Hypesome SWE for Big Hole 2/18/2025-* (84% of Normal)

Snow Water Equivalent for WY 2025- 87% of median (1991-2020)



| Station | Network | Elev. (ft.) | Obs | NRCS Median | % NRCS Median |
|--------------------|---------|-------------|------|-------------|---------------|
| Barker Lakes | SNOTEL | 8,250 | 9 | 9.6 | 94% |
| Basin Creek | SNOTEL | 7,120 | 5.1 | 5.4 | 94% |
| Bloody Dick | SNOTEL | 7,570 | 8 | 9.2 | 87% |
| Calvert Creek | SNOTEL | 6,410 | 6.3 | 7 | 90% |
| Darkhorse Lake | SNOTEL | 8,930 | 19.1 | 22 | 87% |
| Moose Creek | SNOTEL | 6,170 | 11.1 | 12.9 | 86% |
| Mule Creek | SNOTEL | 8,300 | 9 | 11.2 | 80% |
| Saddle Mtn. | SNOTEL | 7,890 | 15.3 | 18 | 85% |
| Slagmelt Lakes | SNOTEL | 8,600 | 18.4 | | |
| Basin Index | | | | | 87% |

Precipitation- 86% of median for SNOTEL sites (1991-2020)



| Station | Network | Elev. (ft.) | Obs | NRCS Median | % NRCS Median |
|--------------------|---------|-------------|------|-------------|---------------|
| Barker Lakes | SNOTEL | 8,250 | 10.5 | 11 | 95% |
| Basin Creek | SNOTEL | 7,120 | 5.6 | 6.1 | 92% |
| Bloody Dick | SNOTEL | 7,570 | 8.7 | 11.1 | 78% |
| Calvert Creek | SNOTEL | 6,410 | 8.3 | 8.5 | 98% |
| Darkhorse Lake | SNOTEL | 8,930 | 19.2 | 20.6 | 93% |
| Moose Creek | SNOTEL | 6,170 | 12.1 | 15.2 | 80% |
| Mule Creek | SNOTEL | 8,300 | 9.4 | 12.4 | 76% |
| Saddle Mtn. | SNOTEL | 7,890 | 13.3 | 16.6 | 80% |
| Slagmelt Lakes | SNOTEL | 8,600 | 21.3 | | |
| Basin Index | | | | | 86% |

- **Outlook:** The 8-14 day outlook predicts normal and above average temperatures and near to above normal precipitation.
- **Seasonal Outlook:** March, and April expected to be colder with above-average precipitation.
- **La Niña watch:** Currently in La Niña but will be phasing out, March through May there is 60 percent chance that we're going to go to ENSO neutral.
- **U.S. Drought Monitor:** The Big Hole watershed is currently in severe drought

Director's Report – Pedro Marques, Executive Director

- **February 6 Memorandum/ Current Funding Freeze**
 - Ordered executive agencies to review NGO funding
 - Policy: Defund NGOs that undermine national interest
 - Broad suspension of funding rather than case-by-case review
- **Immediate Effects on Local Projects**
 - Forest Service: Work halted at Elkhorn Mine & Eastern Pioneers Conifer Project
 - BLM: Halted Eastern Pioneers Conifer Encroachment work
 - Bureau of Reclamation: No guidance for Watershed Restoration Planning grant
 - Fish & Wildlife Service: Smith Sage Springs Design contract delayed
 - BLM & USFS money frozen for projects like conifer thinning
- **Workforce & Economic Impact**
 - Seasonal & temporary job losses at Forest Service & BLM
 - ~40 job losses at Beaverhead-Deerlodge National Forest
 - Conservation & land management projects at risk if freeze persists

- **Water and Fish**
 - Drought Management Plan 2025 Finalized and approved
 - Priority Watershed Application submitted for DEQ's 319 Grant Program/ Application unsuccessful/ Lessons learned for future applications
 - FWP preliminary data: Big Hole fish populations are strong & healthy
- **Restoration Project Updates**
 - High Meadow Storage Project – Mapping potential water storage sites
 - California Creek Superfund Project – Final erosion control design
 - Smith Springs Ditch Siphon – Contractor selected, pending federal funding
 - Rock Creek Fish Barrier – Contract awarded, work scheduled for August
 - Elkhorn Preserve Project – DEQ-funded riparian restoration project
 - Eastern Pioneers Conifer Thinning – \$30K each from Mule Deer & Elk Foundations
- **Groundwater Investigation program**
 - Kickoff meeting scheduled for early March
 - Selected for 2-year Managed Aquifer Recharge Feasibility Study in Wisdom
 - First project of its kind in Montana
- **Variance Review Process**
 - Butte-Silver Bow planning request for floodplain variance
 - Collaboration among four county planners
 - Outcome: Regulations apply only to new construction
- **Montana Beaver Working Group**
 - Annual Meeting: April 1-2, Carroll College & Zoom
 - Policy focus: Using beavers for watershed resilience
 - FWP working on EA for beaver translocation program
- **Government & Policy Engagement**
 - **BHWC Testimonies on State Bills**
 - **HB6** – Pennington RRGL Program- BHWC online testimony
 - **HB7** – RDG Program (mine site restoration)- Beaverhead CD online testimony
 - **HB 256** – Water Storage Fund
 - \$100M state trust fund for water storage projects, generating interest to be spent:
 - 90% for state-owned water infrastructure
 - 10% for pilot projects & dam inspections

Federal Legislation: Fix America's Forests Act (HR 8790)

- Streamlining environmental review for forestry projects
- Incentives for seed collection & biochar utilization
- Proposal for a U.S. Forest Service Western HQ
- Legal Reforms to Forest Litigation
- 120-day deadline to file lawsuits after public comment opens
- Eliminates re-consultation requirement (Cottonwood Decision)
- Allows projects to continue during legal review
- Restricts litigation – Requires prior public comment before suing

- **People:**
 - KG helping with meetings and working on science communication
 - Pedro- Remote work
 - Same phone #
 - WHATSAPP
 - Emma Roginski – Returning intern for Mt. Haggin Uplands
 - Welcome baby Layne Marshall Lynch! – Born February 13th

- **Wildlife Program Update:**
 - Carcass Composting Program
 - Begins March – May
 - Contact: Justin Cottingham (406-600-8295)

Steering Committee Report – Jim Hagenbarth, Chair; Dean Peterson, Vice-Chair; and Roy Morris, Secretary

- The Steering Committee is pleased with the progress BHWC is making and wishes to extend their support and congratulations to Tana and her family in welcoming her baby Layne Marshall Lynch. A gift card and blanket were delivered by the Board.

New Business

- None

Break – 10 minutes

Meeting Topic:

Big Hole River Foundation Water Quality and Invertebrate Monitoring

Presented by:

Brett Marshall, Owner/Lead Scientist
River Continuum Concepts

Introduction

- **Who We Are**

- Lead Investigator: 37+ years of experience in aquatic insect taxonomy and ecology
- Team members with 12, 10, & 8 years of experience
- Contact: RiverContinuum@gmail.com

- **Why Macroinvertebrates Matter**

- Most diverse species assemblage on Earth
- Most abundant and important for ecosystem survival
- Key indicators of water quality, habitat quality, and ecosystem changes

- **Why the Big Hole River Foundation (BHRF)?**

- Essential role in monitoring as state agencies lack capacity
- Need for independent ecological assessment of river health

Study Objectives & Methodology

• Primary Goals

- o Evaluate changes in biological metrics at each site over time
- o Assess longitudinal trends among sites and across years
- o Analyze species composition shifts
- o Track dominant species changes per site

• Field Sampling Methods

- o Led by Brian Wheeler and volunteers
- o Collected 3 Hess Samples per site annually
- o Samples preserved in alcohol and delivered to lab

• Laboratory Methods

- o Sample inventory & sorting (Bug-Picking)
- o Fixed Count Subsample (>200 animals per sample)
- o Midges & insects identified to genus/species
- o Non-insects identified to family/order/class

• Timing of Sampling & Its Impact

- o Sampling conducted in late fall
- o Reduces detection of some insect emergences
- o Advantages of fall sampling:
 - Avoids emergence-related population fluctuations
 - Provides a more stable picture of community structure

• Challenges & Considerations

- o Seasonal variability in species abundance
- o Synchronization of insect life cycles affects population estimates
- o Need for long-term data (suggested 60+ years for detecting major trends)
- o Statistical models account for natural variation and sampling biases

• Statistical Analysis

- o Parametric & Non-Parametric ANOVA (GLM, Kruskal-Wallis)
- o Tests of variance & normality
- o Non-Metric Multidimensional Scaling (NMS) for taxonomic analysis
- o Statistical Power Analysis for detecting significant changes

Key Biological Metrics

• Ecological Community Metrics

- o Total Abundance
- o Total Taxa Richness (LR)
- o Diversity Index (H')
- o Community Evenness (J')

- **Community Stress Metrics (Focus of Report)**

- o EPT Richness (LR) (*Mayflies, Stoneflies, Caddisflies*)
- o % EPT Abundance (*Relative presence of sensitive taxa*)
- o % Chironomidae (Midges) Abundance (*Higher presence indicates stress*)
- o % Non-Insect Abundance (*Higher presence suggests degradation*)
- o Hilsenhoff Biotic Index (HBI) (*Measures organic pollution tolerance*)

- **Response to Environmental Stress**

- o EPT Richness: Decreases under stress
- o % EPT Abundance: Decreases under stress
- o % Chironomidae (Midges): Increases under stress
- o % Non-Insects: Increases under stress
- o HBI Score: Increases under stress

Study Results: Longitudinal Changes (2019-2023)

- **Overview of Site Changes**

- o Big Hole at Twin Bridges (BHTW) – Notable declines in EPT richness
- o Big Hole at Kalsta (BHKA) – Moderate changes, declining EPT abundance
- o Big Hole at Jones Hole (BHJONH) – Generally stable but some fluctuations
- o Deep Creek (DC) – Minor changes, possible localized effects
- o Big Hole at Wisdom (BHW) – Significant degradation, high % midges & non-insects
- o Big Hole at Jackson (BHJ) – Relatively stable, but some seasonal variation

- **Key Observations**

- o Big Hole at Wisdom (BHW) consistently shows signs of disturbance
- o EPT richness declining at multiple sites
- o Increased non-insect abundance at select sites indicates habitat stress

- **Discussion on Statistical Power & Long-Term Data Needs**

- o Short-term (4-year) trends may not be definitive
- o 60+ years of data recommended for robust inferences
- o Averaging across years helps reduce random variability in trends

Taxonomic Analysis & Community Composition

- **Multivariate Approach to Species Changes**

- o Used Non-Metric Multidimensional Scaling (NMS) to analyze species shifts
- o Certain species (e.g., mayflies) linked to cleaner water
- o Midges and non-insects increased in disturbed sites

- **Where Are the Mayflies?**

- o Median Ephemera density measured across sites
- o Significant declines at BHW and other sites

Screening Tools for Rapid Assessment

- **Development of Annual Screening Criteria**
 - o Allows BHRF to quickly communicate river health changes
 - o Not a replacement for full analysis, but provides early warnings
 - o Adjusted based on accumulating data
- **Example Screening Criteria (Jones Hole Site)**
 - o Minimum EPT Taxa: ≥ 30 species
 - o EPT Abundance Thresholds:
 - Minor Concern: 35–27%
 - Major Concern: Below 27%
 - o Community Evenness Target: Maintain stability
 - o Hilsenhoff Index Thresholds:
 - Good: Below 4.0
 - Fair: Below 5.0
 - Poor: Above 5.0

Connections Between Macroinvertebrate & Nutrient Data

- **Question from Montana DEQ: Have correlations between macroinvertebrate data and nutrient/algae data been explored?**
 - o Yes, BHRF has considered this
 - o Study designed to incorporate algae shifts, but needs further refinement
 - o Additional flow stratification & substrate characterization could improve results
 - o More complex analyses require increased replication and funding

Conclusions & Future Considerations

- **Key Takeaways**
 - o EPT species declining in key locations
 - o Midges & non-insect presence increasing in disturbed areas
 - o Big Hole at Wisdom is most degraded
 - o Statistical power analysis suggests increased sample replication needed
- **Recommendations**
 - o Adjust study design to improve replication & statistical detection power
 - o Continue annual screening to detect early changes
 - o Improve stakeholder engagement for conservation efforts

Upcoming Meetings

- March 19, 2025 – 7:00 pm at the Divide Grange Hall: BHC Monthly Meeting o Topic: Invasive Weeds in the Big Hole Watershed.

Adjourn