

**GYH Meeting Notes**  
**February 7-8, 2007**  
**Moose, WY**

**GYH Hydrologists in attendance**

Mark Nienow, Custer NF  
Mark Story, Gallatin NF  
Bryce Bohn, B-D NF  
Louis Wasniewski, C-T NF  
Karri Cary, Shoshone NF  
Liz Oswald, Shoshone NF  
Susan O’Ney, GTNP (host)  
Sean Eagan, YNP  
Dave Salo, B-D NF  
Greg Bevenger, Shoshone NF  
Ronna Simon, B-T NF (host)

**Guests in attendance**

Dan Leemon, Teton Conservation District  
Sue Consolo-Murphy, GTNP  
Aida Farag, USGS  
Dave Harper, USGS  
Bob Wiltshire, Federation of Fly Fishers  
Jeffrey Pettingill, Bonneville County Weed Control  
Cindy Ott-Jones, GTNP  
Ted Porwoll, B-T NF  
Alan Galbraith, B-T NF, retired



**February 7**

**Welcome—Cindy Ott-Jones (Acting Deputy Superintendent, GTNP)**

- ◆ Cindy acknowledged that hydrologists have a daunting task, based on her experience in Colorado.

**Sue Consolo-Murphy**

- ◆ Mary Gibson-Scott is the official GYCC Chair.
- ◆ The Parks are very much involved in water issues, and are trying to give it more outside attention. Example—studying the effects of Jackson Lake dam on National Park resources.
- ◆ There’s a new National Park initiative for hydrologic assessments.

- ◆ Water quality is a “vital sign”. Water quality monitoring program was implemented in 2006, and it will be a regular program.

### **Round Robin**

#### **Sue O’Ney**

- ◆ 2006 was the first season of long-term water quality monitoring: Snake River--- Flagg Ranch, Moose. Plus two trips/year.
- ◆ GTNP has been developing water quality protocols for inverts, seeps, springs. Ask Sue if you want to see them. She’ll add high alpine lakes to her monitoring network.
- ◆ Assessment (mentioned by Sue C-M): Summarize all data for Parks and identify areas needing restoration. It’s a new program—funds will go to a university and P.I., and they’ll produce a report. Sue hopes to incorporate FS data as well.
- ◆ Water rights database for Gros Ventre and fisheries study is coming along.
- ◆ Below-dam (Jackson Lake) study with Jack Schmidt. Jack added a bedload component.

#### **Mark Story**

- ◆ Travel planning FEIS—in appeals. The Gallatin is working through 111 appeals.
- ◆ Timber program has been substantially reduced with the remaining staff working mostly on fuel reduction projects with a commercial component.
- ◆ Water quality monitoring for Jungle Fire in W. Boulder R. for 2007, E. Boulder Mine monitored in 2006
- ◆ David Callery – OSU M.S. student (SCEP)
- ◆ Gallatin burned over 100,000 acres in 2006 with 4 BAER teams.
- ◆ Active watershed improvement program—lots of opportunities and projects – many related to travel planning road decommissioning. .
- ◆ New World mining district – CERCLA rehab
- ◆ Rx fire NEPA
- ◆ Water rights
- ◆ Grazing NEPA

#### **Mark Nienow**

- ◆ Travel planning on the Beartooth RD. New collaborative approach. Looking for cooperative alternative to take thru NEPA.
- ◆ Forestwide water rights review—looking at every water right on the Forest. Long-term project.

#### **Bryce Bohn**

- ◆ Forest Plan: FEIS to be published summer 07. Watershed condition and restoration are driving issues.
- ◆ Remeasures of long-term monitoring sites: looking at a subset. This is to validate grazing stds to improve stream condition.

- ◆ J. of Restoration Ecology paper is coming: topic = can riparian areas improve with cows? *We're all anxiously looking forward to seeing it—maybe a draft version?* Bryce's findings are that yes, they can improve with consistent compliance with Forest stds (at least 70% of the time).
- ◆ Asked to teach a riparian ecology class this past year at UMW.

### **Dave Salo**

- ◆ Unfiltered municipal watershed S. of Butte—haven't been able to harvest timber there. Legal costs for dealing with this are about \$4MM. Soils have been a sticking point.
- ◆ Short on soils help, so Dave and Bryce are doing some of that work.
- ◆ Ditch Bill easements
- ◆ Mineral exploration work is going on
- ◆ AML program

### **Louis Wasniewski**

- ◆ Has been on the C-T for seven months—learning the ground.
- ◆ Watershed layer: not finalized to subbasin level. Need to approve/review boundaries.
- ◆ Trying to take IWWI from 5<sup>th</sup> code to 6<sup>th</sup> code HUCs.
- ◆ Travel management plan: Caribou portion done, looking for funds and help to implement.
- ◆ Programmatic oil and gas EIS for Curlew Grasslands—will be done end of 07/start of 08.
- ◆ Watershed analysis on upper Henrys Fork
- ◆ TMDL: Portneuf watershed.
- ◆ Smokey Canyon mine expansion.
- ◆ BMP monitoring—Brad H. is taking the lead. Good interaction with grazing folks.
- ◆ Looking for partnerships to help with budget shortfalls.

### **Dan Leemon**

- ◆ 10<sup>th</sup> year of water quality monitoring by Teton CD.
- ◆ Watershed plan for Flat Creek: just completed. 4<sup>th</sup> year of watershed rehab on the creek—working with Tom Wesche (Habitech).
- ◆ Fish Creek: Distributed temperature sensor project and macros.

### **Karri Cary**

- ◆ Stream surveys—Greybull R. drainage.
- ◆ Timber sale BMP monitoring
- ◆ Water quality monitoring (cont'd)—nothing is exceeding standards.
- ◆ NEPA
- ◆ ID of watershed improvement projects.

### **Liz Oswald**

- ◆ Purdy Fire rehab
- ◆ State trail program—funds for ATV trails. Road specs and BMPs for state trail operators.
- ◆ BMP monitoring on rec program.
- ◆ Disconnecting roads from streams.
- ◆ Air quality.
- ◆ Working on MS at CSU: Jokulhlaup study. (*yes—I DID look up the spelling! RS*)

### **Greg Bevenger**

- ◆ Mary Maj is resources staff officer on Shoshone.
- ◆ EA to allow wildland fire use outside Wilderness.
- ◆ 2006: Rx fire escape near Lander, Meeteetse fire, Purdy Fire, Little Venus... big fire season.
- ◆ Adjudication: FS is almost done.
- ◆ Forest Plan revision: only Forest in R-2 under the new rule. Draft out 4/1.
- ◆ Togwotee Highway reconstruction, other highway projects.
- ◆ BMP reviews.
- ◆ FS MOU with DEQ in Wyoming: SWCP Handbooks recognized as meeting nonpoint management plan. Sharing of BMP reviews and results. Regarding new national BMPs, Greg said he won't change how the Shoshone works.
- ◆ FS MOU with State Engineer's Office, too.
- ◆ Wyoming Water Development Commission: 5-year weather modification project in the Wind Rivers. Silver iodide and nitrate deposition issues. NEPA will be coming soon.

### **Sean Eagan – geothermal monitoring program**

- ◆ Sean's program is seeing if there is a change in the amount of heat in YNP. Also, is the heat source moving? Sean is monitoring geothermal background data in case of neighboring development outside the Park.
- ◆ 1983: Start of chloride monitoring. Sean is getting it back on track: full anion suite, 28 times/yr. Some work on Reese Cr. on the Gallatin NF.
- ◆ Jeff Arnold: YNP aquatic ecology. Another side to the hydro program.

### **Ronna Simon**

- ◆ Forest Plan revision—new rule.
- ◆ Sole hydrologist on the Forest these days. Water rights position to be filled soon.
- ◆ BMP monitoring to start this year.
- ◆ 2006 summer spent looking at many grazing allotments.
- ◆ New (draft) bank trampling guidelines being reviewed on-Forest.

### **Presentations**

#### **Bob Wiltshire – Aquatic Invasive Species**

- ◆ Federation's role: advancing the sport of fly fishing. Active since 1990s in dealing with invasive species.
- ◆ Public outreach to head off possible future problems—a tough sell when not a problem yet.
- ◆ Invasives = plants, animals, microbes. “Nuisance” species may be native.
- ◆ Zebra mussel example: mostly in lakes, huge impact. Quagga mussel, too: similar to Zebra—found in AZ and CA.
- ◆ Whirling disease: 15 years of research -> no effective management options.
- ◆ “Rock snot”: single cell algae. Decimating fisheries in New Zealand. Nuisance blooms in MT rivers (Boulder, W. Rosebud, Kootenai).
- ◆ Remedies: need to prevent establishment, involve the entire public, since eradication is almost impossible.
  - Understand vectors: natural vs. human.
  - Disinfect gear when moving between watersheds. Clean gear on site BEFORE moving on to next site. Get rid of MUD or VEGETATION on boots, boats, equipment. Don't use chemicals: just rinse off with stream water and brush off solids.
  - Clean Angling and Clean Boater pledges. [www.cleanangling.org](http://www.cleanangling.org).

\*\* Suggest Bob speak at a GYCC meeting. Send proposal to Mary Gibson Scott.

#### **Jeffrey Pettingill – Use of herbicides near water**

- ◆ Japanese bamboo, tamarisk are in E. Idaho (Ririe Reservoir, etc.). Tamarisk has been found in GTNP, too.
- ◆ “The dose is the poison”—correct dose leads to fewer problems.
- ◆ LD50=dose that's lethal to 50% of organisms.
- ◆ Eurasian water milfoil: spreads by any plant part.  $\geq 12$  leaf sets (vs. native N. milfoil, with less than 12 sets).
- ◆ Herbicide kills plant, plant dies, bacteria release oxygen, and this kills fish. Navigate, Renovate, Reward, Sonar (herbicides) don't kill fish.
- ◆ Ditch bank management with herbicides (concern is with liability for chemical companies and water use—potential for downstream use damage if ditch water is contaminated). Different products are for use inside, outside, and along ditch.
- ◆ For streams: Milestone, Redeem, Curtail, Transline (knapweed and other members of the sunflower family), Telar DF, Escort DF.
- ◆ Tordon: stay 10 feet from lateral or subwater.
- ◆ Jeffrey has steel signs with info on invasives (plants, snails, etc.) that can be posted.

#### **Dave Harper – Winter habitat and utilization by cutthroat (CTT), Snake River near Jackson**

- ◆ Winter habitat often the limiting factor for CTT in the northwest.
- ◆ Study objectives: I.D. critical overwintering habitat in the Snake River; ID movement patterns.

- ◆ Backwater areas: groundwater recharge, warmer than mainstem (up to 5C warmer). High use of these by fish.
- ◆ Deep, slow, close to cover areas are preferred winter habitat. Most fish found in runs (52%) and backwaters (35%).
- ◆ No trend in movement of fish. No long downstream migrations.
- ◆ Frazil and anchor ice:
  - Result from supercooled water.
  - Fairly rare along the Snake.
  - Can kill, often displaces fish. Fish go to backwater areas during very cold periods.
- ◆ Winter instream flows about 350 cfs (may be higher than pre-Jackson Lake dam). Adjusted based on inflows.

### **Greg Bevenger – Headwaters Conference**

- ◆ Strategy history.
- ◆ GYCC very supportive and Suzanne Lewis is enthusiastic about a headwaters conference.
- ◆ It wouldn't be imminent as a Yellowstone conference: '09 or '10.
  - Suggested to have stand-alone conference with universities instead, or AWRA may provide opportunity in 2010 or 2011.
- ◆ Do we want to pursue this? Yes.
- ◆ Track successes from the Strategy – revisit it periodically.
- ◆ Greg's tracking document: went through it and added specific info.



## **February 8**

### **Susan O'Ney -- Gros Ventre River Hydrologic Study**

- ◆ There are withdrawals from the Snake R and tribs, even within GTNP.
- ◆ NPS has 281 water rights within the Park. 72 privately held water rights in the Park.
- ◆ Spread, Granite, Ditch, and Gros Ventre Creeks chronically dewatered.
- ◆ Gros Ventre dewatered near the highway July-Oct. "Old timers" believe dewatering is natural.
  - Dewatering -> loss of connectivity
  - GTNP has the most water rights on the ditch at Kelly: could retire ditch, but unsure of effects of returning flows to the stream. About 6 ft of drop across the dam.

- ◆ Park is mapping ditches, measuring flows. There were originally 22 diversions off the Gros Ventre in the Park: 9 are still active. No diversions are screened.
- ◆ New Access DB hotlinking to ArcGIS: includes picture of development, link to flow data, plats.
- ◆ GTNP wants to make sure any changes in management don't lead to detrimental effects on native fisheries. Want to see effects on fish movement in the Gros Ventre.
- ◆ Greg B: Suggested going to WWDC (via local Conservation District) for funds under the Omnibus Water Bill. Water rights can be tracked under contracting using these funds.

### **Karri Cary – San Dimas T&D**

- ◆ (Note: I thought her PowerPoint was very good. May I get a copy on CD, Karri? -- Ronna)
- ◆ SDTDC is offshoot of the USFS WO.
- ◆ 9 T&D areas – focus on soil, water, air program, including fisheries.
- ◆ SDTDC is looking for project proposals from all USFS levels.
  - Proposals are evaluated by steering committee per various criteria.
  - Proposals can't be research in nature.
- ◆ Two GYH Water Strategy possibilities for proposals. PROPOSALS DUE 2/13.
  - Karri will draft up proposal asking SDTDC to come up with a product addressing the recommendations.

### **Mark Story**

- ◆ Derby BAER
  - More than 208,000 ac burned.
  - Complex ownership
  - Clearcuts in Derby Gulch burned hotter than surrounding uncut areas. This may be due to the clearcuts being drier during drought conditions.
  - Lots of undersized culverts and areas with poor drainage before the fire— various solutions
  - Sediment modeling showed highest effects 1-2 years after fire (R1/R4 WATSED used)
  - High intensity/low duration localized storms can produce big stormflow effects.
  - Culverts sized for postfire Q5 (~ to prefire Q50). Cahoon spreadsheet for culvert design used.
  - Conclusions: watersheds less than 5000 ac are subject to convective storm discharges.
  
- ◆ Gallatin NF implementation monitoring 2006
  - Multi-disciplinary project review
  - Evaluation of project objective accomplishments and effectiveness
  - Incorporates MT Forestry BMP audit process.
    - Send out request for project nominations.
    - Team agrees to projects.

- Results posted on GNF website.
- Form includes BMP, Source of measure, Rating (implementation, effectiveness), Comments
- Rx burn: recommendation = go with fall burn and wildland fire use for better results.
- Timber sale: mostly good results after winter logging, but weeds on landings.
- Fish passage: boulder cascade constructed at pipe outfall -> big increase in fish passage.
- In 2008 will adapt to EMS/USFS BMP implementation review format as required.
- Louis: Idaho monitors 10% of all timber sales per MOU.

### **Ronna Simon – Fremont Lake Water Quality Monitoring**

- ◆ First done in 2006 (May, for background, and August, for peak season)
- ◆ Fremont Lake is the municipal supply watershed for Pinedale: Town monitors most parameters for the water supply, which is not filtered.
- ◆ B-T monitoring for PAHs and some VOCs in water and sediments. Concern is for motorized boat impacts on water quality.
- ◆ Results to date: no detectable constituents in water samples. Some PAHs (Benzo(a)pyrene) in sediments at Lakeside Lodge and Sandy Beach.
- ◆ Sampling to continue in 2007—looking for funding to help out.

### **Ted Porwoll – Air quality and lake monitoring near Pinedale**

- ◆ Long-term monitoring sites.
- ◆ Pinedale has come close to ozone non-attainment (similar levels to SLC, Atlanta in winter).
- ◆ National Park trends in N. Rocky Mtns. Show declining trends in air quality.
- ◆ BTNF
  - Black Joe: ANC increasing
  - Nitrate increasing in all lakes
  - Sulfate generally decreasing except at Black Joe outlet
- ◆ February ozone values have been greater than the 80 ppb standard, which is odd (February isn't the "ozone season"). This being investigated.
- ◆ Air data are available on NRIS-Air.

### **Greg Bevenger – Crow Creek fire effects**

- ◆ 1988: Crow Creek (unburned) compared to Jones Creek (100% high intensity burn).
  - 5-year study of peak flows, water yield, flow duration.
  - Found about 25% increase in runoff, 10x increase in sediment yield.
  - Not a paired study, so limited results.
- ◆ 2000: Crow Creek burned
  - About 10% of watershed burned, south aspect.
  - USGS gage at mouth of watershed (reactivated from previous study)



- Discharge, suspended sediment, chemistry monitored.
- Pre- vs. post-fire comparison
  - Reference sites found to be valid
  - Seasonal water yield: no post-fire change
  - Annual peak flow: visually there may be a difference; regression shows no difference.
  - Flow duration: post-fire seasonal discharge lower than pre-fire. Postfire low and high discharges higher than pre-fire. Similar numbers for reference sites. Insignificant changes.
- Possible reasons for little observable difference: short record; drought. If assuming that these aren't factors, must accept that there are no changes from the fire.
- Stednick document states that at least 15% of a watershed needs to burn before effects are obvious. Greg's results are consistent with that.
- Sue O'Ney: IHA program is very helpful for comparing pre- and post-fire discharge data. Developed by TNC, etc.

#### **Headwaters Conference discussion (Greg B.)**

- ◆ Perhaps allow national AWRA to take it on in 2010.
- ◆ Conference brainstorm session (Sean recorded ideas)

#### **Fall meeting**

**September 19-20, 2007**

**New World Mine and upper Clark Fork Wild and Scenic section** (Mark Story and Karri Cary to host)

#### **Winter 2008 meeting**

**February 6-7, 2008**

**Bozeman (Mark Story to host)**

## **GYH Headwaters Conference Recommendation – Initial Implementation Notes**

In “Watershed Management in the Greater Yellowstone Area: An Interagency Strategy”, dated 2006, is, among many others, the following recommendation:

“Because the GYA is headwaters to many of the Nation’s river basins, sponsor a headwaters conference with a watershed science theme that focuses on the importance of watershed health in the GYA. Such a conference could further advance the conservation of water resources in the GYA by bringing together leading scientists working in the field of wildland watershed management.”

At the 2007 annual winter meeting of the Greater Yellowstone Hydrologists sub-committee, discussions were held on how to implement this recommendation. The sub-committee decided a conference in 2010, plus or minus a year, to be held in Jackson, Wyoming, Mammoth Hot Springs, Wyoming, or Bozeman, Montana, would be most feasible and desirable. It was group con-census that a task group consisting of Sean Eagan (Yellowstone National Park), Mark Nienow (Custer National Forest), Mark Story (Gallatin National Forest), and Greg Bevenger (Shoshone National Forest) would staff out, pursue, and implement a plan of action for the conference. Agreement was made that the task group would regularly report to the sub-committee with updates. There was also agreement that other sub-committed members would be utilized as needed.

During the meeting the sub-committee brainstormed conference themes and sub-themes.

Potential theme titles are:

- ❖ Greater Yellowstone Area Headwaters Conference
- ❖ Greater Yellowstone Area Headwaters Conference: Source of Western Water
- ❖ Greater Yellowstone Area Headwaters Conference: Yellowstone, Snake, and Green River Drainages
- ❖ Greater Yellowstone Area Headwaters Conference: Missouri, Columbia, Colorado River Drainages
- ❖ Headwaters of Great Rivers of the West Conference
- ❖ Headwaters of Great Western Rivers Conference
- ❖ It All Flows From Here Conference
- ❖ Go With the Flow: Source Waters of the West Conference
- ❖ Continental Divide Headwaters Conference
- ❖ Three Ocean Divide Headwaters Conference
- ❖ Triple Divide Peak Headwaters Conference
- ❖ Three Waters Mountain Headwaters Conference

Potential sub-themes area:

- Global climate effects
- High elevation stream systems
- Wildfire effects

- Air quality effects
- Glaciers
- Water rights
- Water supply and demand
- Water yield augmentation
- Groundwater
- Geothermal development
- Restoration activities
- Riparian
- Long-term effects of 1996-1997 flooding
- Interagency watershed planning
- Recreation uses of waters and its effects
- Instream flows
- Effects of population growth
- Future visioning
- Grazing
- Aquatic biota
- Water and national security
- Water by-products from energy development
- Mineral and energy development
- Invasive species
- Fisheries
- Toxic pollution
- Sustainable development
- Local economies/politics