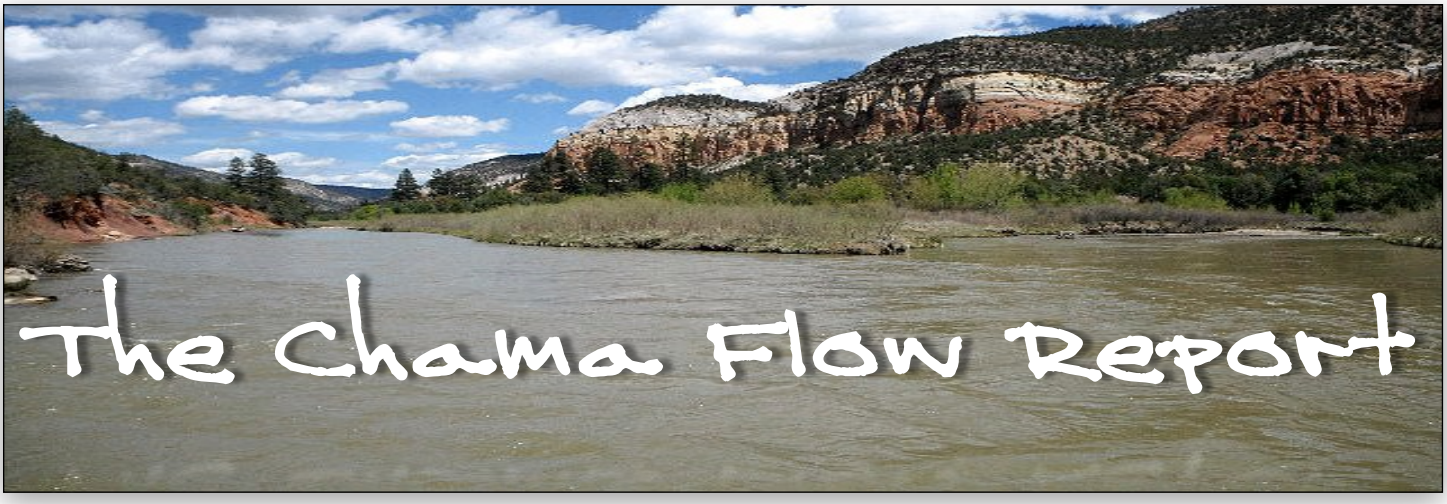

Fall 2013 Volume II, Number 1

Flow Ecology Workshop Culminates First Phase

With the completion of two seasons of baseline data collection in the Wild & Scenic Rio Chama, the Flow Project turned its attention to developing relationships between stream flows and the ecological functions of the river.

A day-long Flow-Ecology workshop, hosted by UNM on March 13, was attended by several dozen natural scientists and hydrologists representing federal, state and local agencies.

The Project Reach saw its heaviest summer grazing in many years as livestock were moved into the canyon from parched uplands Some five dead cows ended up it the river, to the dismay of range managers and recreationists.

Project scientists Mark Stone, Todd Caplan and Greg Gustina reported the results of the baseline study on the hydrology-geomorphology, riparian and aquatic biology, respectively. Participants then broke out into work groups to develop flow recommendations.

With Flow Project Optimization models rapidly approaching completion, the Project Team is planning to evolve into an adaptive management phase, in which we monitor changes in biological conditions to determine whether the environmental-flow hydrograph produced the hypothesized benefits.

Fall Advisory Council Meets October 4 in Santa Fe

Members of the Chama Flow Project Advisory Council and other stakeholders will meet to review the Project's Ecological Flow Recommendations on Friday, Oct. 4, at the BLM State Office in Santa Fe.

With the drafting of the CFP Flow Ecology Report (see results on pg 3) the Project's critical next step is to assure that alternative water operations will have the concurrence of agricultural and municipal water users and managers.

The Advisory Committee meeting will also hear from Project modelers on the outputs of its systems dynamic model of "optimized" flows: a synthesis of legal requirements, and recreational and environmental flow recommendations. Discussion of water-user-dictated rules for Project operations is also on the agenda.

All interested groups are welcome to attend, but organizers are asking attendees to RSVP by Oct. 1, in order to have the proper number of lunches (and seats) for the 9 a.m. meeting. RSVP to (575) 751-1269 or steve.harris39@gmail.com.

Calendar of Events

Sept. 4 – Rio Nutrias Watershed Plan meeting, 6 pm at Cebolla Community Center.

Oct. 4 – Advisory Council Meeting, 9 a.m. to 2 p.m. At BLM Santa Fe.

Late October – Abiquiu Community Meeting (TBD)

Nov. 30 – Release of Draft Chama E-Flow Report

The Chama Flow Report

The newsletter of the Rio Chama Flow Optimization Project

Vol. II No. 1

Andy Dennison, Editor

The Project Team

Steve Harris, *Project Management*
Mike Harvey, *Fluvial Geomorphology*
Todd Caplan, *Riparian Ecology*
Dick Kreiner, *Reservoir Management*
Nabil Shafike, *Hydrology/Modeling*
Melinda Harm Benson, *Facilitation/Adaptive Mgmt.*
Mark Stone, *Hydrological Modeling*
Ryan Morrison, *Hydraulic Modeling*
Dagmar Llewellyn, *Hydrology*
Laura Crossey, *Water Quality*
Andy Dennison, *Communications*

Projected Advisory Council

Albuquerque-Bernallilo Water Utilities Authority
Middle Rio Grande Conservancy District
New Mexico Interstate Stream Commission
U.S. Bureau of Reclamation
U.S. Army Corps of Engineers
U.S Bureau of Land Management, Taos Field Office
U.S. Forest Service, Santa Fe National Forest
Los Alamos County Utilities
Pueblos of Ohkay Owingeh, Santa Clara, San Ildefonso
Rio Chama Acequia Association
Acequias Nortenos
New Mexico River Outfitters Association
Adobe Whitewater Club
New Mexico Trout Unlimited
City and County of Santa Fe
Jicarilla Apache Nation
University of New Mexico
Christ in the Desert Monastery
Ghost Ranch
El Vado Ranch

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Project Notes

Dr. Stone Wins NSF Award

Project team member Mark Stone, an assistant professor of civil engineering at UNM, will receive the National Science Foundation Faculty Early Career Development Award that includes funding for research in the next five years. The award is given to young faculty members who "exemplify the role of teacher-scholars through outstanding research, excellent education and the integration of both education and research."

Dr. Stone heads the hydrology modeling effort for the Chama Flow Project that will produce flow recommendations for the Bureau of Reclamation's operations at El Vado Dam. His research at UNM has centered on using "river forensics" to reconstruct historical conditions and to better understand the impacts of river engineering projects while informing river restoration efforts.

Gustina Takes Montana Post

Greg Gustina, the lead scientist for fisheries biology on the Project, has taken a job with the U.S. Forest Service in Missoula, Mont. A fish biologist for 10 years at the Taos Office of the Bureau of Land Management, Gustina will become a superivisor-natural resource specialist in the Lolo National Forest.

Gustina's efforts in the Chama Flow Project included aquatic surveys and analysis, and flow recommendations to improve aquatic habitat and fisheries.

Rio Grande Climate Assessment Nears Completion

Dagmar Llewellyn, project lead for the Bureau of Reclamation's "Upper Rio Grande Impacts Assessment", a component of Reclamation's West Wide Climate Risk Assessment, rolled out preliminary results of the study in a July 10 presentation at the New Mexico Museum of Natural History and Science. Llewellyn told the 150+ attendees that, in the analyses performed by Reclamation and Sandia Labs to support this study, both Rio Grande native water supplies and imported San Juan- Chama Project supplies are projected to steadily decline over the next 50 years. However, the impacts to the Navajo and Blanco Rivers, sources of San Juan-Chama Project, are projected to be less severe than those to the native waters of the Rio Grande.

The draft study goes to Washington this month, for a Department of Interior review. When finalized, the report will be posted to Reclamation's website, at: http://www.usbr.gov/WaterSMART/wcra/index.html

Chama Water Quality: A Year-Long Intensive Study

Throughout 2012, the New Mexico Environment Department's Surface Water Quality Bureau monitored water quality at over 30 stations on the Rio Chama and tributaries. The Surface Water Quality Bureau conducts surveys in each of New Mexico's watersheds approximately every eight years, to evaluate whether New Mexico's lakes and streams meet water quality standards.

NMED completed earlier studies of the Chama watershed in 1999 and 2007. These studies were used to develop total maximum daily loads (TMDLs) for the Rio Chamita and Upper Chama (above El Vado) as well as in other tributaries and sub-reaches of the Rio Chama below Abiquiu. The TMDL is the pollutant load (often expressed in pounds/day) that the stream can handle and still meet its water quality standard, at a critical (usually low) flow.

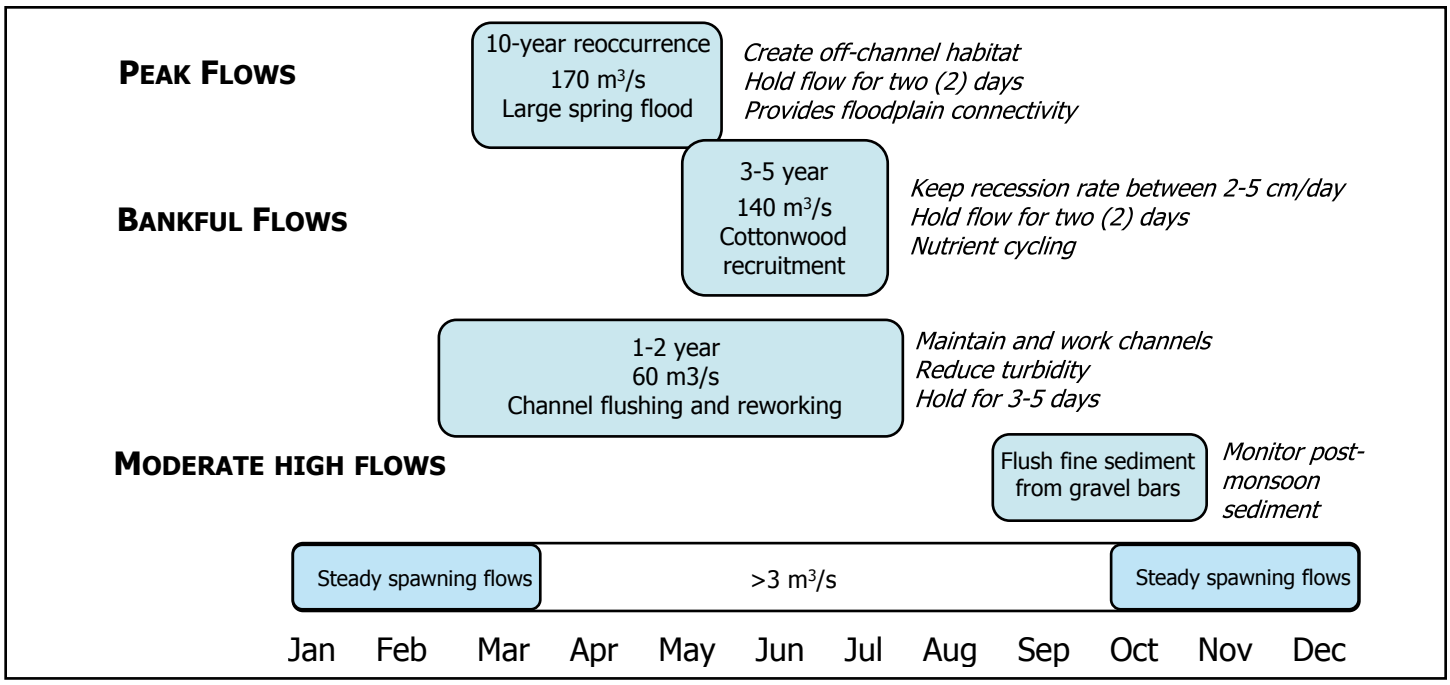
Water quality in these studied streams showed exceedences for such parameters as aluminum, ammonia, phosphorous, bacteria, temperature, dissolved oxygen and turbidity. New water quality issues could emerge from the 2012 monitoring data once they are assessed.

This Chama-wide WQ study is expected to be released before year's end, and posted to NMED/SWQB's website: http://www.nmenv.state.nm.us/swqb/Chama/

In the Wild and Scenic (Project) Reach, the Chama generally met standards in the 2007 study, but in a major tributary, the Rio Nutrias, a total daily maximum load (TMDL) was established for turbidity.

Stakeholders interested following or assisting in a newly-initiated Rio Nutrias Watershed Assessment, a set of strategies for abating erosional effects on water quality, can get information from NMED's Delbert Trujillo at 505-827-2867.

Flow Ecology Workshop Recommendations



On March 10, breakout groups offered the following recommendations for Rio Chama releases:

Terrestrial Ecology Group

Habitat Complexity. Peak releases of 6,000 cfs for at least three (3) days will promote formation of new off-channel wetlands and create new safe-sites for cottonwood seeding establishment. Flow regime includes a rapid ramp-up of a flood-flow of 6,000 cfs for three (3) days once every 10 years in March-June. Benefits include new wetlands for life-cycle requirements of amphibians, invertebrates, and avian species.

Cottonwood Recruitment. A peak release of 5,000 cfs once every 3-5 years in late May-early June, with recession from peak flow no more than one (1) inch per day. Release would flood active floodplain. Benefits include roosting habitat for bald eagles, and greater songbird diversity.

Aquatic Ecology Group

Sediment Transport. Peak releases of 3,000 cfs every 1-3 years and 6,000 cfs every 3-5 years will move the sediment "mosaic" downstream and away from the El Vado Dam tailwaters.

Brown Trout Spawn. A peak release of varying magnitude every other year will deposit small gravels (2 cm-minus) for October to March spawning period. A spring runoff event and summer releases of varying magnitude will promote algae, invertebrate and native fish spawn.

Turbidity. Bankful flows to move sediment every 4-6 weeks in the summer with a frequency of 1.7 years.

Geomorphology Group

Enhancing River System. In the first five years, greater disturbances of 6,000 cfs every two (2) years in the spring will break out the existing sediment lockdown. Then, similar peak releases with more gradual ramping every 5-10 years in the spring to continue break out.

Reworking Geomorphology. Bankful flows for 3-5 days every 2-3 years will flush fines and develop gravel bars. The timing of the flows isn't as important as gradual ramping up and down.

See 'Workshop' Page 4

Data Gaps

Participants in the workshop identified a number of research topics of relevance to the flow-ecology relationship.

- Native fish production
- Amphibian population
- Songbird population
- Box elder reproduction
- Grazing study
- Flyover imagery to fill in between sites
- Groundwater/surface water interaction
- Multi-habitat benthic sampling (outside riffle)
- Fine sediment yield from tributaries
- Bank compaction
- Algae assessment
- Food chain/trophic study

The Drought of 2013: E-Flows May Be Harder To Attain

Bureau of Reclamation's 2013 Annual Operating Plan (AOP) for Heron and El Vado Reservoirs, based on the April 1 SNOTEL data, reflected a precipitous late-winter decline in high elevation snowpack, the result of a combination of spotty snow coverage, sublimation (ice converting to vapor) and underlying dry soil conditions.

True to the grim forecasts, Middle Rio Grande Valley farmers enjoyed no supplemental water releases from El Vado after the first of July, relying entirely on the scanty runoff from the mainstem Rio Grande for their late summer supplies.

Chama flows through the Project reach (averaging ~ 600 cfs) were based on availability of Pueblo "Prior and Paramount" water, water leased for the silvery minnow and, especially, steady deliveries of the Albuquerque-Bernalillo County Water Utilities' San Juan Chama Project water. Runoff peaked at La Puente around May 1, at a little under 2,000 cfs.

Average to above-average monsoon precipitation, from mid-July to present, appears to have somewhat moderated drought conditions in upland areas of the Chama and Rio Grande, where ranchers had been forced to liquidate two-thirds of the cattle they'd started the year with. Earlier, much of the range had turned bare, brown and dusty, and early cuts of irrigated hay produced poorly.

The monsoonal moisture had a small, but welcome, impact on storage levels in Elephant Butte, which has gained about 1 percent of net storage in recent months, but remains well below the RG Compact's 400,000 a-f threshold.

Projected 2014 implementation of environmental flow alternatives seem likely to be challenged by extremely low storage levels in Heron and El Vado. El Vado will end the season with less than 20,000 a-f, and Heron with about 40,000 a-f , (11 percent of capacity) of water remaining.

'Workshop' from Page 3

From previous workshops, the Project Team gathered input from anglers and boaters, and developed a "recreational hydrograph.

Recreational Flows

In previous work, the Project Team gathered input from anglers and boaters.

For anglers, the primary concern was to provide stable low flows during November-March for brown trout spawning.

Boaters sought to assure no net loss of weekend recreational opportunities.

The ecological and recreational parameters will populate the optimization model developed by UNM engineering graduate student Ryan Morrison, with a goal of including a synthesized recommendation to Bureau of Reclamation's 2014 operating plan.

Rio Grande Restoration
A Voice for the River
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