ROARING FORK
CONSERVANCY
Bringing People Together to Protect Our Rivers

July 21, 2010

Via E-Mail (ray.alvarado@state.co.us)
Ray Alvarado
Section Chief
Colorado Water Conservation Board Water Information Section
1580 Logan St., Suite 200
Denver, CO 80203

Re: Phase I of the Colorado River Water Availability Study

Dear Mr. Alvarado,

The following comments are submitted by Roaring Fork Conservancy in response to the "*Colorado River Water Availability Study – Phase I Report – Draft*" (CRWAS).

Currently, we have two categories of concerns: 1) the inadequate quantification of non-consumptive needs used in the Phase I modeling effort, and 2) the potential risks associated with allowing more water diversions based on the high end of the very wide range of projected available water. We are aware that some of the concerns raised in this letter may be more applicable to Phase II, and that the CWCB plans to address these components in the second phase.

The Colorado Water for the 21st Century Act (HB 05-1177) established the Interbasin Compact Committee and nine Basin Roundtables and directed them to "develop a basin-wide consumptive and non-consumptive water supply needs assessment, conduct an analysis of available unappropriated waters within the basin, and propose projects or methods, both structural and non-structural, for meeting those needs." The non-consumptive needs assessment consists of two tracks: 1) identifying stream and river segments with important environmental and recreational attributes, and 2) identifying projects and methods to meet the non-consumptive needs of those stream and river segments, including determining the quantity and timing of water necessary to maintain stream and river attributes.

The current study relies solely on decreed CWCB instream flow rights and necessary endangered fish flows to quantify non-consumptive flow needs. **This has resulted in a gross underrepresentation of actual non-consumptive flow needs.** CWCB instream flows do not directly consider the importance of other aquatic organisms or in-channel and over-bank indicators. As you are undoubtedly aware, a number of studies have shown that existing instream flow rights are too low. [1] Additionally, the CRWAS analysis

[1] The following two examples demonstrate that the existing CWCB instream flows may not be adequate to protect the environment to a reasonable degree. An instream flow assessment of Maroon Creek conducted by W.A. Walsh several years ago identified the importance of lower Maroon Creek for fish and determined that the existing CWCB instream flow rights (14 cfs) were not adequate for the lower creek. Walsh recommended a flow of 23.2 cfs- *almost a 40 percent increase*. *See* Walsh, W.A. 2000. *Instream Flow Assessment of Maroon Creek, Aspen, Colorado*.

of climate change only assesses the impact on flows; it does not address the complicated question of how climate change will indirectly affect aquatic species and their flow needs In addition, further clarification on future water supply in headwaters streams due to climate change is necessary. Will high elevation streamflows increase or decrease? The conclusion that "higher elevations generally have less flow available" (table 2 executive summary) is not consistent with other citations by saying "annual modeled streamflows decreases basin wide except in the Yampa River Basin, and higher elevations locations in the Upper Colorado River Basin" What will be the impact to the upper Roaring Fork, Frying Pan and Crystal watersheds be?

The quantification of non-consumptive needs is an extremely difficult task. However, this fact does not negate the need for a much more realistic quantification of flow needs before the results of this study can be considered an accurate portrayal of water availability. **It is imperative that the CRWAS include a robust assessment of the quantity and timing of water necessary to maintain *all* important stream and river attributes.**

As discussed in the *State of the Roaring Fork Watershed Report 2008*, understanding and defining all non-consumptive uses, including environmental, recreational, and hydropower uses, requires evaluation of a broad set of hydrologic parameters influencing numerous biological and geomorphic processes. These processes include the magnitude, timing, and duration of flows, the rate of change in flows, and the frequency of flow events. Assessment of environmental flow needs is often hampered by spatially and temporally limited stream gage and modeled flow data, a lack of adequate ecological and geomorphic data, and a limited understanding of the specific relationships among biological and geomorphic processes and flows. For example, what are the relationships among sedimentation, flows, and fish and macroinvertebrates? Land use changes add another layer of complexity to any assessment of non-consumptive needs. Flow needs for rafting and kayaking activities are also difficult to quantify and thus far have been based solely on opinions of the recreational community regarding the level of flows necessary to sustain a quality recreational experience. Not only are flows economically important for the fishing and recreational industry, but aesthetically pleasing flows are important for maintaining property values and (even more difficult to quantify) the landscape aesthetics that enhance visitors' experiences.

Examples of important non-consumptive water uses and values include:

- Maintenance or restoration of high quality habitat for fish and aquatic life,
- Sufficient flows for channel and riparian area maintenance,
- Support of water-based recreation, including rafting, kayaking, and angling,
- Adequate flows to support hydropower generation,
- Flushing flows to remove sediment deposition that may smother spawning beds,

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Prepared for the Aspen Wilderness Workshop, Inc. 49 p. A more recent draft study of Castle Creek by Miller and Swain recommended a minimum flow of 17.2 cfs in lower Castle Creek, instead of the existing 12 cfs (*a 30 percent increase*). *See* Miller, W.J and K.M. Swaim. 2010. *Draft Castle Creek Hydroelectric Plant Environmental Report*. Prepared for the City of Aspen, Colorado. Miller Ecological Consultants. 84p.

- Groundwater recharge, and
- Adequate flows to maintain high water quality.

A non-consumptive needs assessment should define and quantify flows necessary for the protection of *all* environmental and recreational uses and values, and take account of our energy (hydropower) needs as well.

The ongoing planning process for the *Roaring Fork Watershed Plan* has recognized the critical need to accurately quantify all of the watershed's non-consumptive needs. One of its draft objectives is to *"Identify flows needed to meet environmental, recreational and hydropower needs"*. Many of the Plan's draft recommended actions are designed to help meet these needs:

- At the state and local level, support the funding of research projects designed to address the non-consumptive needs knowledge gap.

- Work with the Colorado Basin Roundtable Non-Consumptive Needs Assessment (NCNA) Working Group and the designated NCNA contractor(s) to assess the utility and limitations of the Watershed Flow Evaluation Tool. Evaluate the suitability of other tools/methods developed to quantify and obtain environmental flows (*e.g.*, The Nature Conservancy's Ecologically Sustainable Water Management methodology and the Ecological Limits of Hydrologic Alteration tool) and implement the most suitable approach.

- Ensure that the Colorado River Basin Water Availability Study adequately assesses and addresses the Roaring Fork Watershed's non-consumptive needs.

- Create and maintain an adequate network of stream gages in the watershed.

- Assess flow alteration in stream reaches where stream gage or modeled data are lacking.

- Conduct site-specific studies of environmental and recreational flows needed in priority stream reaches in the watershed. Include an analysis of how often these flows are not being met.

- Assess the economic consequences associated with non-optimal flows.

In the current assessment of potentially available water, it appears that most of the water would come from existing peak flows (April to July). It is well recognized that peak flows are an integral part of the hydrograph. Reducing peak flows without a thorough assessment of non-consumptive needs (including potential climate changes, such as the predicted shifts toward earlier peak runoff and flow reductions in late summer and early fall) may lead to significant environmental, recreational, and economical impacts in the future. Reducing peak flows is likely to reduce critical overbanking flows and groundwater recharge and contribute to lower base flows. As a watershed organization,

with concerns of the health of the watershed, the seasonal timing of demands and supply is critical.

According to the CRWAS, and based purely on historical hydrology, the water available for future consumptive use in the Colorado River is between 0.5 and 0.9 million acre-feet. When alternate climate change scenarios are considered, the range increases from 0 to 1 million acre-feet. CRWAS recommends stakeholders interpret findings:

- From their own perspective,
- Considering their assessment of possible future conditions,
- Considering the resources they have available to adapt,
- Considering their role in water management, and
- Considering their tolerance for risk.

Who are the stakeholders that will interpret these findings, and will they interpret the findings with the environmental, recreational, and economic concerns of the Roaring Fork Watershed in mind? For example, developing water at the upper end of the range represents a high risk to the watershed, while development at the lower end of the range represents a lower risk. Will the risk taker pay all of the direct and indirect costs associated with our watershed not having sufficient water in its rivers and streams?

Finally as a watershed organization concerned with citizen involvement, Phase 1 should have a citizen education component to educate the general public before Phase 2 is started and completed so that the CWCB proceeds based upon citizen input in the next phase of studies.

We appreciate the opportunity to comment on the CRWAS and look forward to working with you on this difficult project in the future.

Sincerely,

Richard J. Lofaro, Jr.
Executive Director

Cc; Kathleen Curry, Gail Schwartz