To: *Cal-TROA Team
Subject: TROA derailment issue - Summary of initial operation studies from Rod Hall
Cc: Kathleen Eagan, Mal Toy, Neil Eskind

Hi,

FYI, below is a summary of our first step in resolving the recent TROA derailment, which I first described in an e-mail dated July 30.

--- Summary of initial operation studies from Rod Hall---
--- on Credit Water Establishment ---
--- and Opportunities for Storage ---

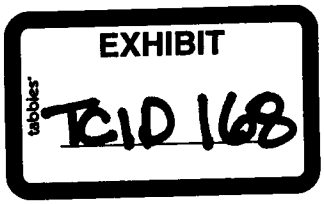
Rod Hall finally completed his initial Truckee River Operation Model Runs (on Credit Water Establishment and Opportunities for Storage) late on September 9, 1999, and he distributed a 4-page summary, with an explanation, to the TROA Exchange Subgroup at a meeting that we attended in Reno the next day. An explanation to a wider group is on the agenda for the September 14, 1999 TROA Drafting/Policy meeting (in the morning). I've copies of Rod's handout, which I can fax to you if you'd like, but, be forewarned, they consist of tables only, which are very difficult to understand without an explanation.

In any case, below is my understanding of the results, with some emphasis on how they might affect California.

First, Rod generated these model runs very quickly and he's not had much time to review the results to see if all outputs make sense. A few results are counter-intuitive, and others seem erratic. However, he believes some general trends are apparent which do make sense. In fact, the Group did come up with some explanations for these trends that didn't seem too far-fetched.

There are two major issues. The first questions if Credit Water may be stored, using downstream purchased water rights, against any release, or just releases for Floriston Rates (naturally, there's a middle ground here that wasn't analyzed). I gave this example before:
: Sierra's understanding was that, if a party decides to
: release Credit Water, say 200 cfs, to increase total flow
: in the Truckee River, say, from 500 cfs to 700 cfs, other
: parties can use this opportunity to store any water rights
: they have against the 500 cfs currently flowing in the river,
: so the party wanting to release only 200 cfs might have to
: release up to 700 cfs to ensure a total of 700 cfs in the
: river. The rationale is that TROA gives other parties,
: including possibly California, who have purchased water
: rights to the 500 cfs in the river, the right to store
: this water against any upstream releases.

First, as would be expected, the US/Tribe do benefit from restricting Credit Water storage to



releases for Floriston Rates. They could get a couple more cui-ui runs over a hundred year period, although this would cause less overall water flowing to Pyramid Lake (Rod's initial guestimate is that this lower flow is due to evaporation).

Sierra was originally concerned because, if they could only store against Floriston Rates, they could lose anticipated drought storage. Hence, they asked Rod to include the standard model runs with their currently anticipated water use pattern, but do a second set of model runs with a more flexible water use pattern. The results indicate that, while Sierra's standard use pattern would cost them 4000 to 6000 AF of drought storage (at the end of the worst drought of record), a more flexible water use pattern would pretty much eliminate any adverse effect (or at least bury it in the noise).

Rod also provided some results on the effect on Fernley's water supply. While their average annual supply fell only about 30 AF, the number of years their supply fell below 4000 AF increased by 1 year over the century, and the number of years their supply fell below 4500 AF increased by 4 years over the century. Rebecca's grim face told a story.

Rod also provided some results on the effect on water quality in the Truckee River at Sparks and Derby. The ability to meet standards fell substantially. Don Mahin looked grim, but still couldn't rival the look on Rebecca's face, especially since BobP ignored her while suggesting Don look into creating a flexible storage schedule which might improve these results as they did for Sierra. However, Sue said Sierra, with their new build-in flexibility, might have found all the alternative periods to store Credit Water, which, with their higher priority, would still leave a Water Quality and Fernley Water deficit.

In any case, we're more than bystanders in this dispute. What's an adverse effect on Fernley and Water Quality Credit Water is also likely to be an adverse effect on any California Environmental Credit Water which is stored using purchased downstream rights. Rod did not include California Environmental Credit Water in the model, so we can't verify this, but it seems fairly obvious since our priority for establishment of CECW is below both Fernley and Water Quality. During the meeting, I remarked that this was one of our concerns, asking that California be included in any discussion of resolution of this issue.

In regard to reservoir-based recreation, more storage by the US/Tribe means higher summer reservoir levels, and storage was generally higher at all the reservoirs, especially in Prosser in the early part of the summer and Boca in the latter part of the summer. The results also showed Tahoe to be a bit higher in the early part of the summer, but that could cause more problems in terms of erosion of the lake.

In regard to instream flows in California, the US/Tribe preference, only storing Credit Water adverse to Floriston Rates, appears to do a bit more for meeting Cal-DFG minimums below Prosser and Stampede. There does not appear to be any other effects on instream flows.

Finally, I suggest we be careful that any resolution of the first issue allows California to release JPFCW for preferred instream flows without allowing others to store Credit Water against this

release. The is not in any model runs, so we can't evaluate it's effect, but it could be substantial.

The second major issue is how the US/Tribe's water rights to Prosser and Stampede will be implemented under TROA. Rod modeled different combinations of these constraints:
1) annual reservoir storage limits (e.g. 126 afa in Stampede)
2) limiting heir spring storage to the space available above any carry-over storage
3) no limits on storage (by the US/Tribe)

These results were remarkable for the absence of any notable differences. Sue did comment that (3) may still lead to less storage opportunities, although it didn't appear to be a limiting factor in these model results.

However, Sue also mentioned that (3) may limit California's ability to accumulate Joint Program Fish Credit Water, since more of the US/Tribe's water would be accumulated as Fish Water rather than Fish Credit Water. Rod said he'd looked at JPFCW storage in the model runs but couldn't figure out how to present this data since the amount of JPFCW fluctuated a lot under (3), and he didn't understand why but thought it might be due to a glitch in this model run. I asked him to send me the raw data so I could attempt to evaluate these results.

So, what's the plan — Rod will focus on a smaller number of these model runs, review them for consistency with anticipated results more carefully, try to determine why we're seeing any differences, and provide everyone with more detailed results. It's difficult to say how much more Rod can do before next Tuesday (when he'll again summarize these results), but Gordon plans to limit this discussion to a couple hours, so any action on these issues is unlikely until the Sept 28-30 TROA Drafting/Policy meetings.

If you have any questions or comments on this, please give me a call. Roger Johnson was also at the meeting and he could provide information on it, especially on these water rights issues, since the group continues to delve into Roger's thoughts when trying to get this train back on its tracks.

John Sarna 916/227-7609

MODELING NEEDED

	SHORTHAND NOTES FROM MEETING	ROD'S INTERPRETATION
1A	Parties may store against a release or pass-thru even if they couldn't store otherwise.	"Parties may credit store in a reservoir by reducing its release or pass through (including release or pass through of Project Water, natural flow, Fish Credit Water, etc.) provided there is an adequate supply in the mainstem Truckee River from Natural flow and releases of Floriston Rate Water."
1B	Inflow released for Floriston Rates or to supply TCID	"Parties may credit store in a particular reservoir using only: • Inflow released for supply of Floriston Rates or • Inflow released for supply of Newlands Project diversion under OCAP or • Floriston Rate storage (Tahoe/Boca/Tahoe-Prosser Exchange) released for supply of Floriston Rates Any or all of these releases may be used during a particular time period.
2A	Stampede and Prosser store to permit limit in a year, and total ≤ capacity	"Stampede and Prosser annual impoundment of Project Water will be limited by their permit/license and by total capacity.
2B	Stampede and Prosser store to capacity in a year	"Stampede and Prosser may impound Project Water up to their capacity in a year."
3A	Pass-thru water in Stampede (even if in priority to store) to meet fish demands	"The portion of reservoir release (excluding spill) which is less than inflow minus loss (or "pass through") and which is provided for supply of Pyramid Lake/lower Truckee demands, will be charged as natural flow (even if the reservoir has space and priority which would allow accumulating storage). There will be no impoundment of Fish Water storage associated with the inflow that is allocated to release of natural flow."
3B	Capture FW and release FCW to meet fish demands, after FCW gone, then nat'l flow	"The portion of reservoir release (excluding spill) which is less than inflow minus loss and which is provided for supply of Pyramid Lake/lower Truckee demands, will be charged as Fish Credit Water and the inflow will be impounded as Fish Water. When there is no Fish Credit Water in storage, such release will be charged as natural flow. There will be no impoundment of Fish Water storage associated with the inflow that is allocated to release of natural flow."
3C	Same as 3B except after FCW gone, then FW then Natural Flow	"The portion of reservoir release (excluding spill) which is less than inflow minus loss and which is provided for supply of Pyramid Lake/lower Truckee demands, will be charged first as Fish Credit Water and the inflow will be impounded as Fish Water. When there is no Fish Credit Water in storage, such release will be charged as Fish Water unless there is no Fish Water in storage, in which case it will be charged as natural flow. There will be no impoundment of Fish Water storage associated with the inflow that is allocated to release of natural flow."

Note from Rod: "All studies: Credit water establishment will use a seasonal pattern of water rights that changes from year to year. Each year's pattern will be intended to increase opportunity for establishment of Credit Water as compared to the opportunity that would exist using a fixed seasonal pattern. Previous studies have used fixed seasonal patterns."