
MEMO

TO: HELEN HARRINGTON
FROM: JENNIFER CUHACIYAN
SUBJECT: REVIEW OF ROHE TRANSFER 73969 AND PERMIT 37-22385
DATE: 8/5/2009
CC: ALLEN MERRITT

SUMMARY OF PROPOSED CONDITIONS

Goal: Evaluate potential injury to MSF water rights 37-7919 and 37-8307. The proposed transfer calls for a water right to be moved 3.7 miles upstream of its original location. This stretch of river falls within a minimum stream flow reach. For my analysis of this transfer, injury to the minimum stream flow water right has occurred if there is any additional dewatering of the river once the flow has dropped below 189 cfs. Therefore, to prevent any injury to the minimum stream flow between the original and proposed locations, the water right must be curtailed no later than when the flow in that section drops below 189 cfs.

Option A: Curtail 3 days after Hailey drops below 189 cfs. The condition proposed by Allen Merritt calls for the transferred water right to be shutoff three days after the Hailey gage drops below 189 cfs or when the 3/24/1883 priority is curtailed by the watermaster, whichever occurs first. This condition is based on his analysis to identify the average number of days between the date the Hailey gage (USGS 13139510) drops below 189 cfs and the date the calculated flow at Rohe drops below 189 cfs.

Option B: Curtail when Hailey drops below 178 cfs. An alternative to Option A is that the transferred water right be curtailed when the Hailey gage drops below 178 cfs or when the 3/24/1883 priority is curtailed by the watermaster, whichever occurs first. I arrived at this value through simple linear regression between the observed flows at Hailey and the calculated flows at Rohe. Based on my analysis, the flow at the Hailey gage is expected to be approximately 178 cfs when the flows at Rohe drop below 189 cfs. Figure 1 illustrates the relationship between the flows at these two locations.

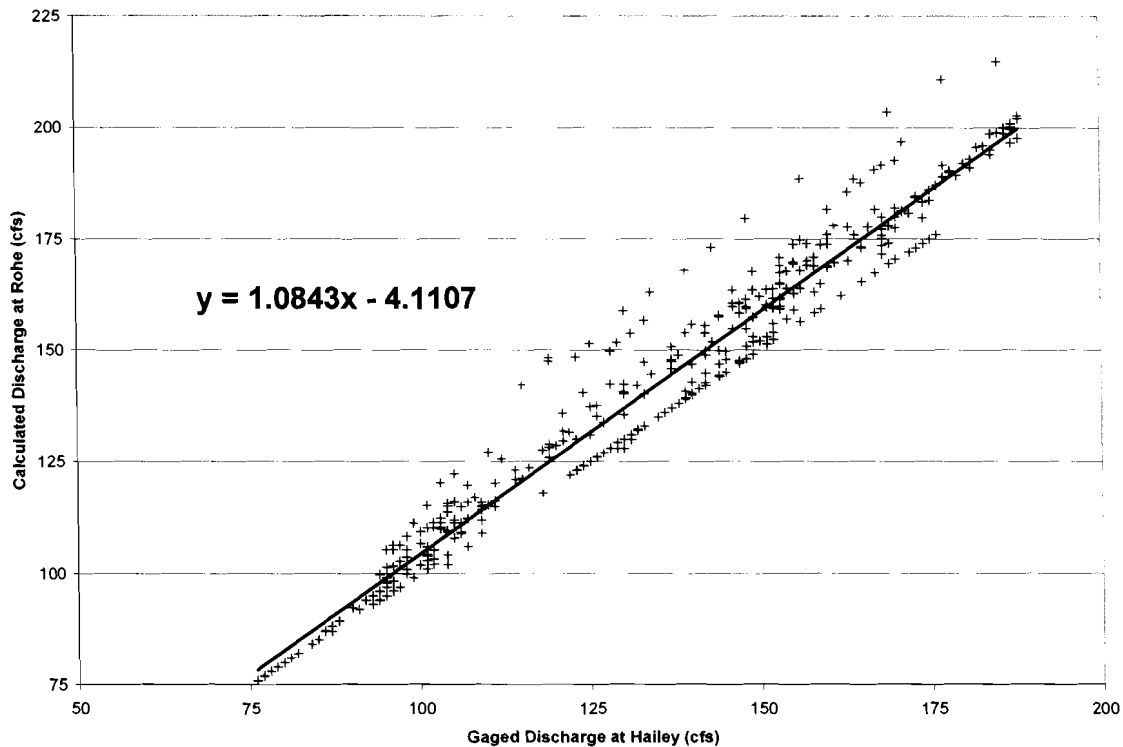


Figure 1: Regression analysis between calculated flows at Rohe and observed flows at Hailey.

In an attempt to evaluate the effect of both options on curtailment of this water right, I compared how much earlier the right would have been curtailed under each option in the years 2000 to 2005. The table below lists the number of days between the date the Hailey gage dropped below 189 cfs and the date this right was cut historically (based on priority) or the date it would have been cut had either condition been in place. The “Difference” columns contain the number of days between the priority date cut and the condition-based cut. Negative differences were set to zero since the right would have been cut by priority before the condition would have applied. On average, Options A and B result in the water right being curtailed 7 to 8 days earlier than it would have been curtailed based on priority.

	Priority Date	Option A: 3 days	Option B: 178 cfs	Difference w/ Option A	Difference w/ Option B
2000	3	3	9	0	0
2001	11	3	1	8	10
2002	21	3	3	18	18
2003	6	3	1	3	5
2004	14	3	1	11	13
2005	1	3	6	0	0
Average				6.67	7.67

IMPORTANT OBSERVATIONS

- With only one gage (at Hailey), we are unable to estimate reach gains or losses along this segment of river, therefore both analyses assume there are no gains/losses.
- Due to the fact that the 0.01 cfs evaporative loss from the pond cannot be “shutoff”, the maximum curtailment for this point of diversion will be a reduction of 0.02 cfs or 66%.
- The pond is to be excavated in a location close to the river that likely would have had high evaporative losses naturally. According to ETIdaho estimates for lands covered in wetland, willow, or cottonwood near Hailey, evapotranspiration from the pond excavation area (30’ by 150’ irregular in shape) could reach rates as high as 0.001 cfs.
- Allen points out that the purchase agreement for this water right only requires 20% of the right to remain in the Hiawatha canal to mitigate injury to other canal users and that the remainder of the right (0.05 cfs) could remain in the river. It is important to note that given the method by which it appears priority cuts are made in this part of the system (based on flow at Hailey), increasing the flow at Hailey by 0.05 (or 0.07 cfs when the Rohe diversion is curtailed) will have the effect of keeping diversions “on” longer throughout the reach. Perhaps the language of the condition should require that these flows remain undiverted.
- Theoretically, moving this water right from the Hiawatha canal upstream 3.7 miles to the Rohe pond will result in a -0.03 cfs change in flow along that segment of river. At the same time, if 0.05 cfs is left undiverted below Hiawatha, this will result in a 0.05 cfs increase (0.07 cfs when the right is curtailed) in stream flows below the Hiawatha canal. Based on the calculated flows at various points between Hailey and Rohe, the section of river below the Hiawatha canal exhibits the lowest flows within this segment of the river.

CONCLUSIONS

Additional gages and implementation of an accounting model in this basin would greatly improve our ability to study the cumulative impacts of the points listed above. Without additional gages, we are limited to making assumptions about reach gains and losses and are unable to evaluate injury to minimum stream flows or other water users with reasonable certainty. Recognizing this lack of adequate data to evaluate injury/benefit, we recommend that language be added to the final condition (Option A or Option B) that allows for amendments to be made as more or better data and technology become available.