

Response to Request for Guidance from the Big Wood River Ground Water Management Area Advisory Committee

Prepared for the Advisory Committee by the Technical Working Group

12/10/2021

This report responds to a request for guidance made at a meeting of the Big Wood River Ground Water Management Area (BWRGWMA) Advisory Committee on 11/29/2021. Specifically, members of the Advisory Committee requested that the Technical Working Group (TWG) respond to two TWG directives that were included in item 3 of the Draft Term Sheet items dated 12/02/2021. Item 3 reads as follows:

3. Additional Mitigation in Dry Years (< 210 KAF at Hailey)

On **April 1st** of each year the predicted or forecasted flow volume (April-September) for the Big Wood River gage station at Hailey will be reviewed. If the forecast predicts basin supply above 210 KAF, no additional mitigation actions are necessary at that time. In years with a forecast below 210 KAF, additional mitigation actions must be taken to reduce consumptive use of ground water and to provide additional storage water for senior surface water users on the Little Wood River.

There will be a final review of the Hailey gage forecast on **June 1st** of each year. The forecast value on June 1st shall be used to determine any adjustments to mitigation actions planned or taken since the April 1st forecast.

Actions taken when the forecast is less than 210 KAF at Hailey include:

- a. Additional GW consumptive use reductions through mandatory cuts in pumping. *The Technical Work Group (“TWG”) will develop a guideline for groundwater consumptive use limits for the basin based on two (or possibly three) different tiers of forecasted water supply [emphasis added].*
- b. Purchase of additional storage (up to 1,300 AF/yr as listed above for Little Wood River). *The basin pumping plan developed by the TWG will include information on what additional water must be purchased [emphasis added].*

In response to the Advisory Committee request, members of the TWG met on three occasions (12/3/2021, 12/7/2021, and 12/9/2021). At all three TWG meetings, data analyses relevant to the item 3.a. directive were presented by consultants to South Valley Ground Water District (SVGWD). Data analyses were also presented by consultants to the Big Wood and Little Wood Water Users Association (BWLWWUA) at the meetings on 12/7/2021 and 12/9/2021. At the meeting on 12/9/2021, members of the TWG discussed recommendations relative to item 3.b in the Draft Term Sheet. Finally, there were follow-up meetings with the SVGWD and BWLWWUA consultants on the afternoon of 12/9/2021 and morning of 12/10/2021 to consolidate recommendations.

The two item 3.a. data analyses that were considered by the TWG differed in two important respects: 1) the BWLWWUA analysis is based on the four-day moving average of daily flow values at the Sportsman Access gage on Silver Creek (USGS 13150430), while the SVGWD analysis is more similar to the one described in Sukow (2021a) and is based on monthly Silver Creek reach gain estimates, and 2) the BWLWWUA analysis sums up gaged flow deficits for the entire irrigation season, whereas the SVGWD analysis sums up reach gain deficits for the period June through September. Despite these differences, the methods yielded similar results.

To avoid confusion, and with buy-in from both the SVGWD and BWLWWUA consultants, a single method for determining water-supply dependent reach gain deficits is being recommended (Shaw, 2021). The method requires a separate calculation to deduct the benefit to the Silver Creek reach gain from following 1,500 acres in the SVGWD and then scaling up the remaining reach gain deficit to the estimated groundwater consumptive use (GWCU) deficit (Sukow, 2021b). The spreadsheets that are used to calculate reach gain deficits and additional GWCU reductions are posted on the TWG webpage ([hyperlink](#)) under the tab for the 12/9/2021 meeting, along with narratives describing each of the computations.

Three tiers below 210 KAF are proposed by the TWG: 155-210 KAF, 100-155 KAF, and less than 100 KAF. Preliminary, tier-based recommendations for additional management actions are summarized in Table 1.

Table 1. Recommended additional management actions

Irrigation Season Water Supply	Avg. of Apr-Sep Volume Forecasts (KAF)	Volume for Estimating Reach Gain Deficit (KAF)	Computed Silver Creek Reach Gain Deficit (AF)	Est. Jun-Sep Benefit to Silver Creek of Following 1,500 acres (AF)	Additional GWCU Reduction (AF)	Additional Storage Water Delivery (AF)
Adequate	> 210	-	-	1,390	-	-
Low/Dry	155 – 210	182.5	1,986	1,390	1,275	650
Very Low/Dry	100 – 155	127.5	6,655	1,390	11,260	1,300
Extremely Low/Dry	< 100	100	9,346	1,390	17,016	1,300

In accordance with previous guidance (TWG, 2021), the need for additional GWCU reductions for the coming year should be based on the average of Natural Resource Conservation Service and Northwest River Forecast Center April 1 forecasts for the irrigation season (April through September) flow volume at the USGS gaging station at Hailey (USGS 13139510). Additional storage water deliveries should be based on the June 1 forecast for the irrigation season streamflow at the Hailey gage.

As described previously (TWG, 2021), currently available methods for estimating flows in Silver Creek are limited and forecasts for the Big Wood River at Hailey are being used by the TWG to estimate Silver Creek flows until a more accurate prediction method has been developed. The use of Hailey gage forecasts to evaluate flows in Silver Creek introduces uncertainty into the foregoing GWCU reduction analysis.

Because of uncertainties in several relevant factors, including but not limited to the relationship between flow at Station 10 and reach gains to Silver Creek, year-to-year variations in irrigation demand, and the spatial and temporal distribution of future consumptive use reductions, the recommended volumes are rough estimates. The TWG recommends adaptive management be applied to future versions of the management plan, including periodic post-audits of whether management plan actions were sufficient to meet the target goal, followed by revisions to the management plan actions and/or metrics as needed.

References

Big Wood River Ground Water Management Area Technical Working Group, Response to Request for Information from the Big Wood River Ground Water Management Area Advisory Committee, Prepared for the Advisory Committee by the Technical Working Group, 11/24/2021, https://idwr.idaho.gov/wp-content/uploads/sites/2/groundwater-mgmt/big-wood-gwma-advisory-comm/TWG_response_to_questions_11-24-2021-Final.pdf.

Shaw, D., 2021, Preliminary analysis of groundwater consumptive use reduction within the Wood River Valley aquifer system, <https://idwr.idaho.gov/wp-content/uploads/sites/2/groundwater-mgmt/Technical-Work-Group/Preliminary%20Analysis%20of%20Ground%20Water%20Consumptive%20Use%20Reduction%2012-13-21.pdf>.

Sukow, J., 2021a, Preliminary analysis of groundwater consumptive use reduction within the Wood River Valley aquifer system, <https://idwr.idaho.gov/wp-content/uploads/sites/2/groundwater-mgmt/big-wood-gwma-advisory-comm/IDWR-Preliminary-Analysis-of-Consumptive-Use-Reduction-within-the-Wood-River-Valley-Draft-11092021.pdf>

Sukow, J., 2021b, Estimating consumptive use reductions corresponding to estimated Silver Creek shortfalls, <https://idwr.idaho.gov/wp-content/uploads/sites/2/groundwater-mgmt/Technical-Work-Group/ScaleSilverShortfallToCUREd.pdf>.

TWG – see Big Wood River Ground Water Management Area Technical Working Group