

Skinner, Corey

From: Sharon Lee <slee247@mac.com>
Sent: Friday, March 8, 2024 1:38 PM
To: Keen, Shelley; Skinner, Corey
Cc: Justin Stevenson; Pat McMahon; Pat Purdy
Subject: Topics in the Big Wood Ground Water Management Area Plan for Discussion
Attachments: Outline for Discussion with BWGWMA Plan Advisory Committee-Corey Skinner Requests dbs 3-8-24.pdf

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Shelley and Corey,
Please find the list of topics we would like to discuss. The backup you requested is also enclosed.

Please let us know if you have any questions.

Justin Stevenson
Pat Purdy
Pat McMahon
Sharon Lee

March 8, 2024

In 2022 the ground water and surface water users in Basin #37 and #37B agreed to a Ground Water Area Management Plan with a three-year term. All water users also agreed to look at the effects of the actions taken in the management plan as time progressed and to adjust those actions where appropriate. Galena Ground Water District and the South Valley Ground Water have looked at several of the required actions. The topics we'd like to discuss are an attempt to understand the effects of some of those required actions and evaluate their ongoing implementation.

Justin Stevenson, Pat McMahon, Pat Purdy and Sharon Lee

Outline for Discussion with BWGWMA Plan Advisory Council

Questions/Topics

1. Impact of delayed start of the irrigation season on stream flows to Station 10 and Stanton Crossing
BWGWMA Plan Page 7 B. 1.
See page 3 of Erick Powell memo dated December 11, 2023.
2. Impact of September 15 turnoff on stream flows to Station 10 and Stanton Crossing
BWGWMA Plan Page 7 B. 2.
See pages 4-6 of Erick Powell memo dated December 11, 2023.
3. Impact of fallowing acres on stream flow deliveries to Station 10 and Stanton Crossing
BWGWMA Plan Page 6 V.1. A.
See pages 1-4 of Erick Powell memo dated December 11, 2023.
4. Modifications to plan in good water years
BWGWMA Plan Page 6 V.1. This is a request to add a new section. No provision was made in the original plan for good water years.
See Dave Shaw memo dated March 4, 2024.
 - a. Definition of a good year (240KAF and greater at the Hailey gage)
 - b. Modifications to actions at 240 KAF:
 - no fallow, no delayed irrigation start date or September 15 turnoff, no water purchases.
 - continue CIEF and cloud seeding contributions.
 - continue to maintain 32 cfs at Station 10

5. The purpose of buying additional storage water in very dry and extremely dry years
BWGWMA Plan P. 10-12 2.

See attached Priority Comparison Chart

32 cfs and 1,500 AF of delivered storage water is an adequate water supply to the lower Little Wood River and 918 AF of storage water to the Big Wood River below Magic Reservoir in dry years. Examine the water supply to the Little Wood on dry and very dry years before ground water pumping was well established to determine if additional purchased water is needed in very dry and extremely dry years.

6. Impacts of groundwater extractions by Cities, other Basin 37 groundwater users and domestic users on streamflow deliveries to Station 10 and Stanton Crossing.
Section IV of BWGWMA Plan. Page 5.

The main goal of this plan is “to manage the effects of ground water withdrawals on the aquifers from which the withdrawals are made and on any other hydrologically connected sources of water.” Idaho Code 42-233b.

These ground water withdrawals listed above all have an effect on the aquifer and hydrologically connected sources but although a nominal fee is paid to the CIEF and cloud seeding efforts, those impacts are not directly addressed in the plan. For the plan to be effective and comprehensive, these impacts need to be addressed more fully than in the present plan.

7. Benefits of the current plan to the Big Wood River water supply to Magic Reservoir & below Magic Reservoir

(See #6.) The plan is focused on Silver Creek because that was the focus of the 2021 hearing from which this Plan sprang. In order to be effective however, this plan needs to include effects on the Big Wood River as well. Understanding how the current plan has benefited Magic Reservoir and the Big Wood River below Magic is an important first step.

8. Impacts of ground water users from the Camas Prairie on inflows to Magic Reservoir
BWGWMA Plan Section V. 1. C. 2. Page 7

(See #6) Surface water flows from the Camas Prairie have traditionally accounted for a third of Magic Reservoir’s fill. All ground water wells in the Camas Prairie should be metered. Is a \$10,000 to the CIEF proportionate to the impact from that drainage?

9. Silver Creek @ Hwy 93

BWGWMA Plan Section VII P. 12

We hope the Parties will agree to direct CIEF funds towards studying and implementing solutions to reduce water losses to the system in this location.

Topics Reserved for Later Check-in Points

These are topics we would like to know more about but need more data to assess:

1. Adequate water supply for the Little Wood River

BWGWMA Plan P. 5 IV. and P. 8-9 D. 1.

- a. Effect of maintaining 32 cfs at Station 10 & delivery of 1,500 AF storage water at Station 54
- b. Water rights & priority dates kept in priority/for how long?
- c. Re-evaluate 240 KAF at the Hailey gage and its delivery of a full supply for 1884 water rights through September 1 for Silver Creek and the lower Little Wood River.

At the hearing in Boise in June of 2021 the water master testified that Silver Creek and the Little Wood required about 40 KAF for a full water year. He also testified that 5 KAF generally comes from Magic Reservoir. The water master further testified that water would keep the rights with priority dates of April 1, 1884 and senior in priority through September 1. We would like to know how the requirements for 32cfs and 1,500 AF of storage water were arrived at and which rights they satisfy.

2. Adequate water supply in the Big Wood River below Magic Reservoir

BWGWMA Plan P. 8-9 D. 2.

- a. Definition of a full water supply to the Big Wood River below Magic
- b. Effect of delivery of 913 AF storage
- c. Water/water rights & priority dates kept in priority/for how long?

An adequate water supply was never established for the natural flow rights below Magic Reservoir. We'd like to know what that supply is and what rights the 913 AF of storage water keeps in priority.

3. Benefits to water supply from CIEF projects

BWGWMA Plan P. 7-8 C.

The Plan provides that CIEF funding will be used as follows: "CIEF funds will be used primarily for infrastructure improvements and other permanent measures that improve the efficiency of delivering senior water rights, protect ground water levels, or increase surface water flows, and for purchasing storage water." The Plan should require monitoring and reporting of the benefits of these projects.

Attachments

- Erick Powell memo dated December 11, 2023
- Dave Shaw memo dated February 9, 2024
- Dave Shaw memo dated March 5, 2024
- Priority Comparison Table

WRV Model Analysis of SVGWD 2023 Curtailment Acres

SVGWD and GGWD

Brockway Engineering, PLLC

GEP, P.E. – December 11, 2023

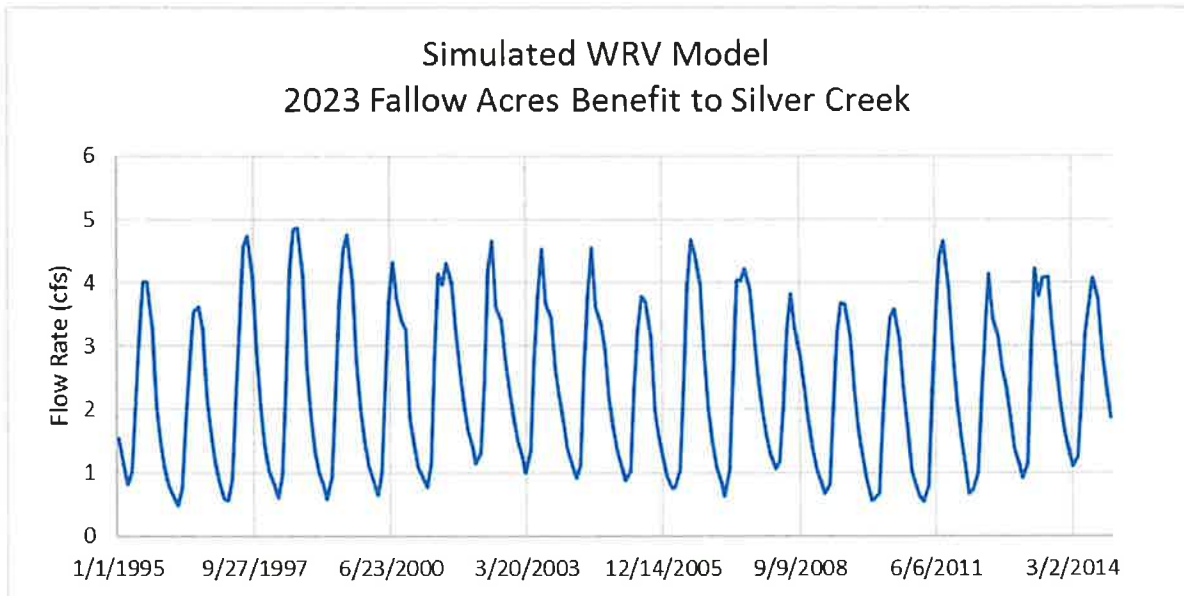
The following summary are the Wood River Valley Groundwater Model (WRV Model) results from the 2023 fallowed acres within SVGWD of 1293.3 acres.

Based on the shapefiles provided, the Following of acres includes, approximately:

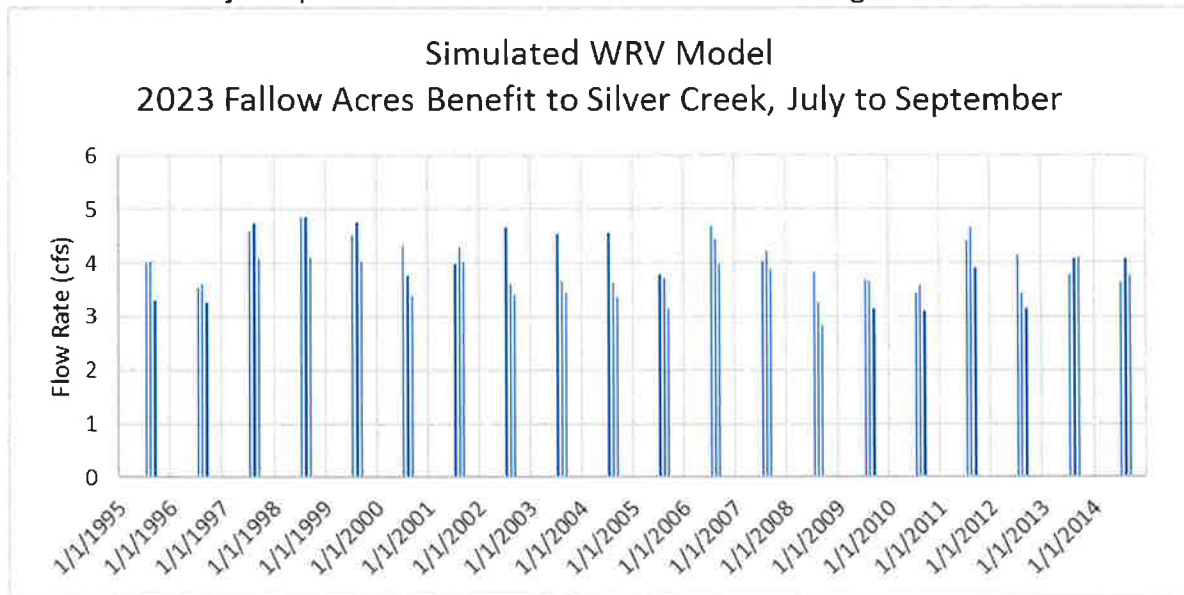
- 38 Different Water Right Owners
- 48 Different Land Owners
- 294 Water Rights
- 146.5 acres with groundwater only
- 14.8 acres of Silver Creek (or tributary) only
- 31.0 acres of Big Wood River (or tributary) only
- 325.6 acres with Silver Creek (or tributary) and supplemental groundwater
- 772.1 acres with Big Wood River (or tributary) and supplemental groundwater
- 35.8 acre of Combination of Big Wood River (or tributary), Silver Creek (or tributary), and Supplemental Groundwater

Effect of fallow on deliveries to Station 10 and to Stanton Crossing:

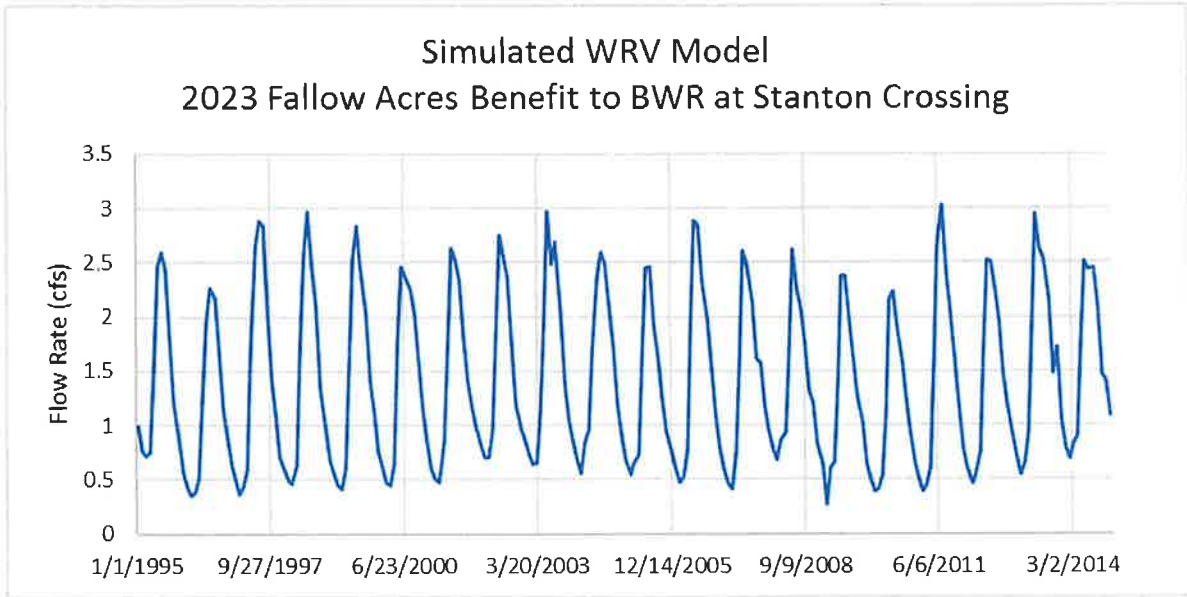
1. Benefit to Silver Creek
 - a. Model is only capable of predicting influx to Silver Creek above sportsman's access, not at Station 10
 - b. Annual Benefit to Silver Creek is on average 1686 acft or 2.32 cfs



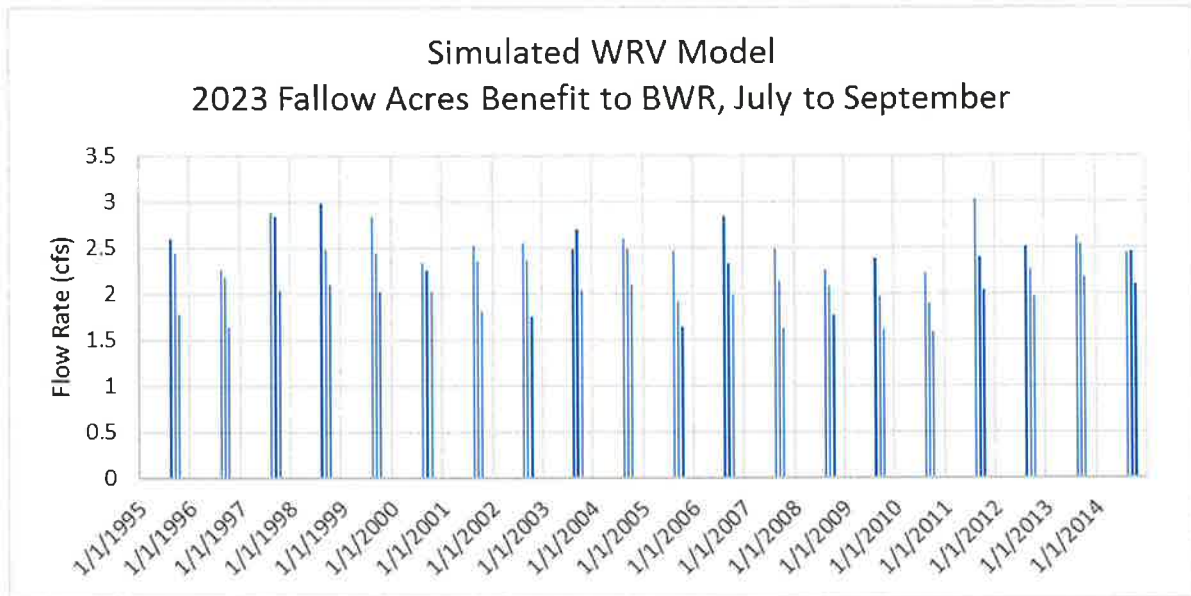
c. July – September Benefit to Silver Creek is on average 713 acft or 3.88 cfs



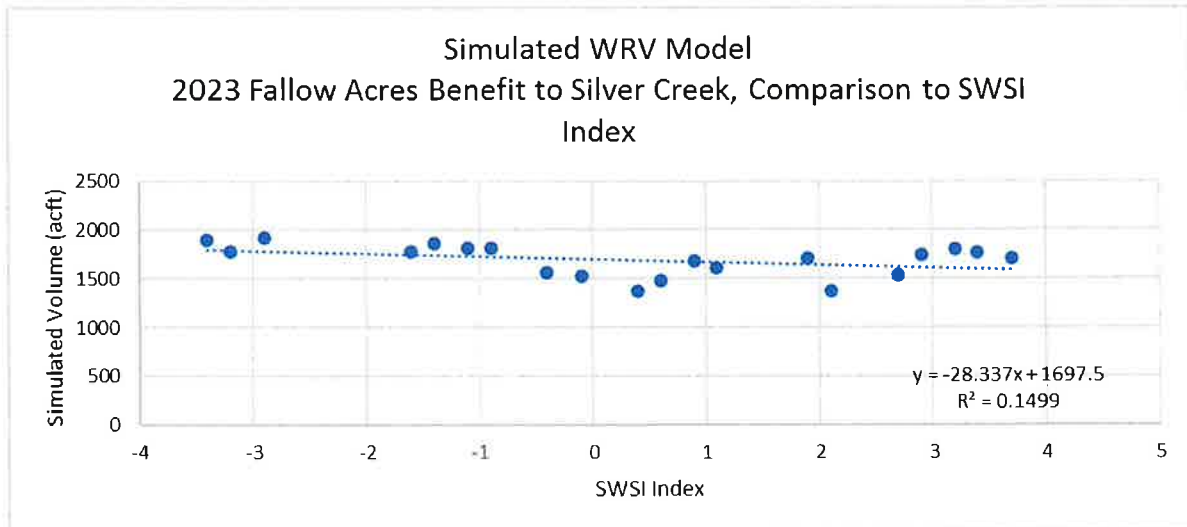
2. Benefit to Stanton Crossing (Hailey to Stanton Crossing and Willow Creek)
 - a. Model is calibrated to the Big Wood River reach of Hailey to Stanton Crossing Reach and Willow Creek, which includes surface water diversions.
 - b. Annual Benefit to Big Wood River/Willow Creek is on average 1019 acft or 1.40 cfs



c. July – September Benefit to Big Wood River/Willow Creek is on average 413 acft or 2.26 cfs



3. Based on the SWSI index, there doesn't seem to be a strong correlation between Wet Years and Dry Years for simulated results.

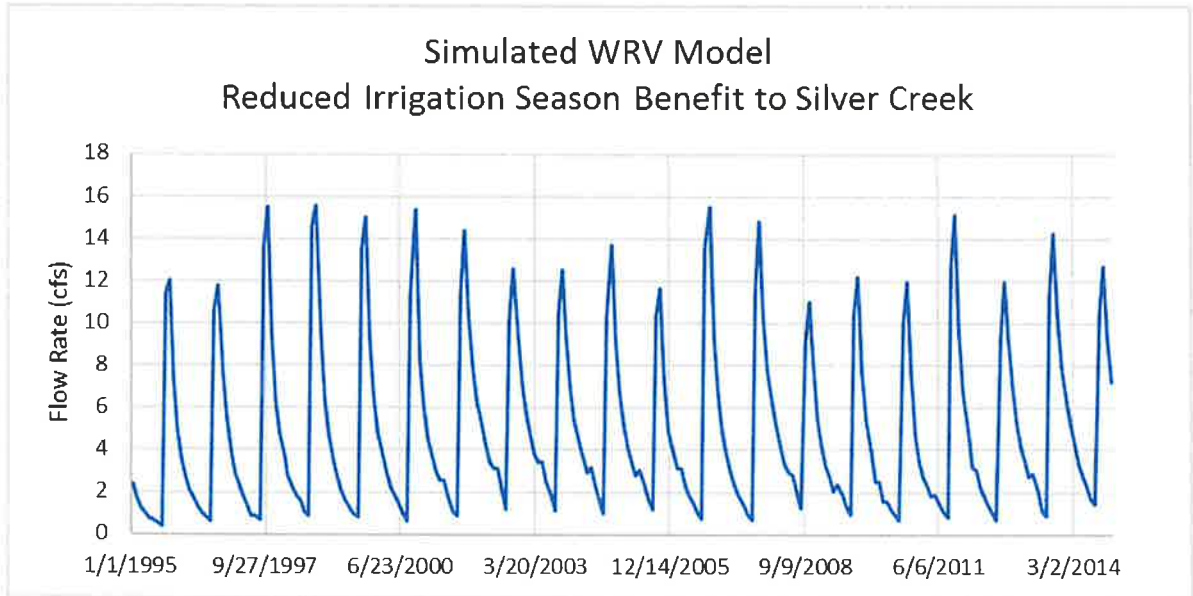


4. Yes, Location Matters

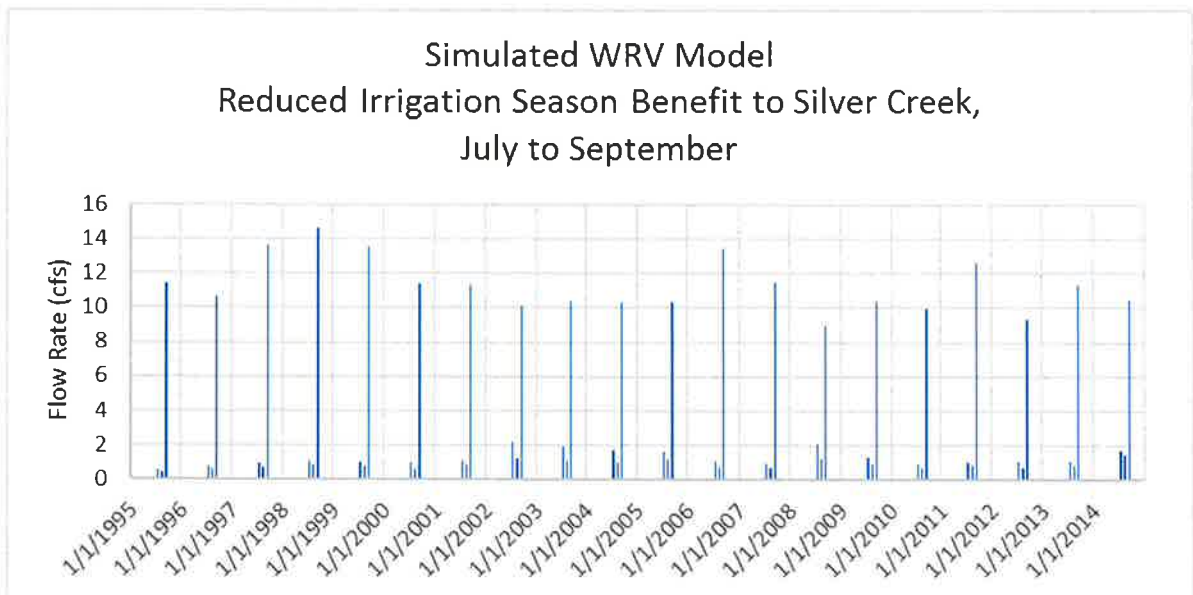
- a. Curtailment within the Triangle, towards Silver Creek will impact Silver Creek
- b. Curtailment within the Triangle, towards Stanton Crossing will impact the Big Wood River.
- c. Curtailment above the Triangle will primarily impact the Big Wood River.
- d. Because this is a model, there will always be calculated impacts to all river reaches.

Effects of the Shortened Irrigation Season

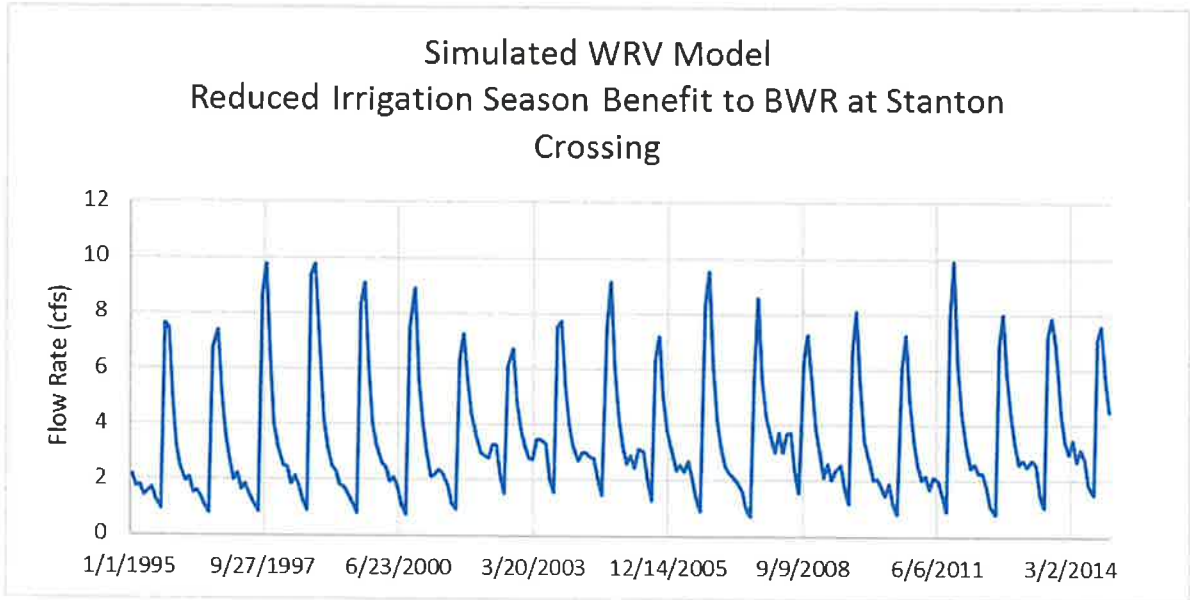
- 1. Groundwater users will not irrigate before May 1 or after September 15.
 - a. Assumption that little groundwater diversions occur prior to May 1. Only evaluating after September 15 through October.
 - b. 29,825 acres of groundwater curtailment after September 15 (an average of 0.12 ft/acre or 3575 acft for September) through October (an average of 0.08 ft/acre or 2450 acft for October). (This is conservatively high – as I used the ET for Picabo for ET estimates throughout the entire valley. I could have used adjusted ET values for Hailey and Ketchum to refine this further).
 - c. Silver Creek benefit
 - i. Annual Benefit to Silver Creek is on average 3614 acft or 4.99 cfs



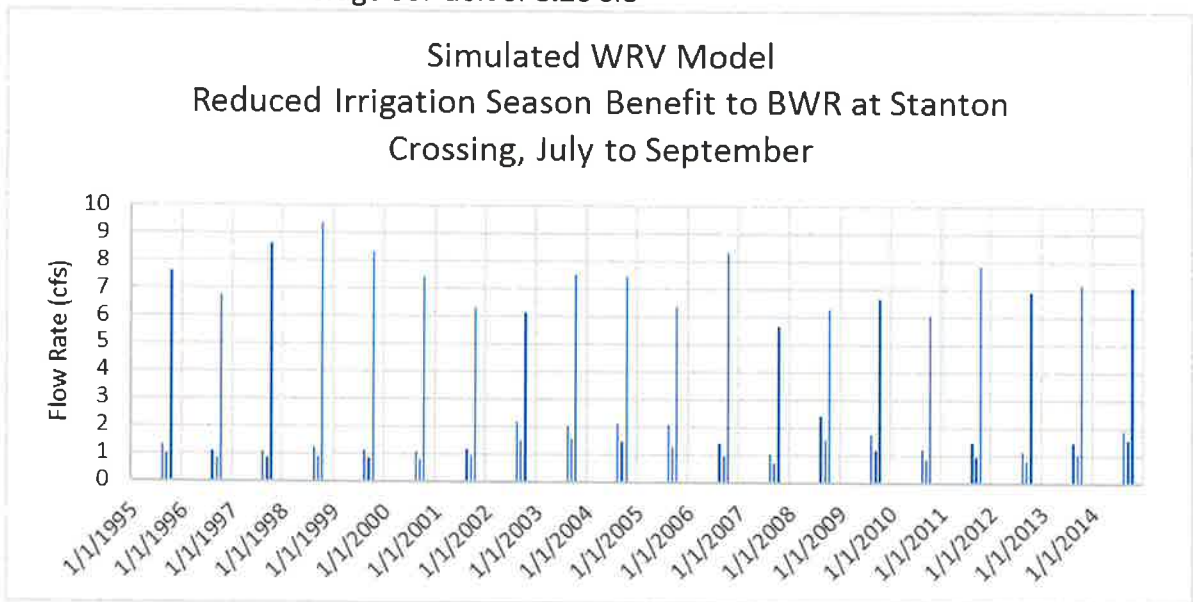
ii. July – September Benefit to Silver Creek is on average 803 acft or 4.48 cfs



d. Hailey to Stanton Crossing and Willow Creek = Big Wood River benefit
i. Annual Benefit to Big Wood River/Willow Creek is on average 2578 acft or 3.56 cfs

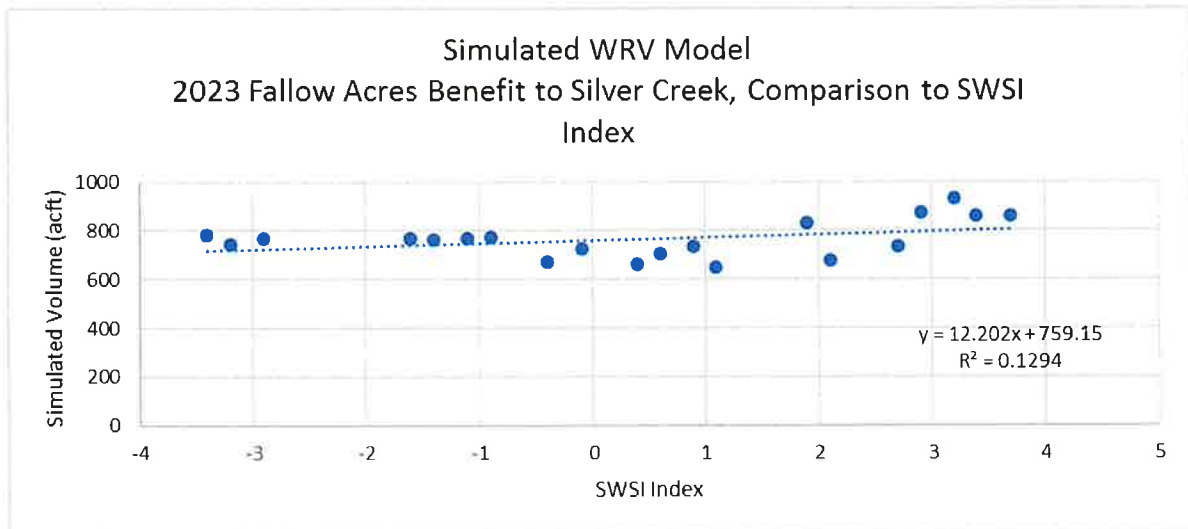


ii. July – September Benefit to Big Wood River at Stanton Crossing is on average 587 acft or 3.26 cfs



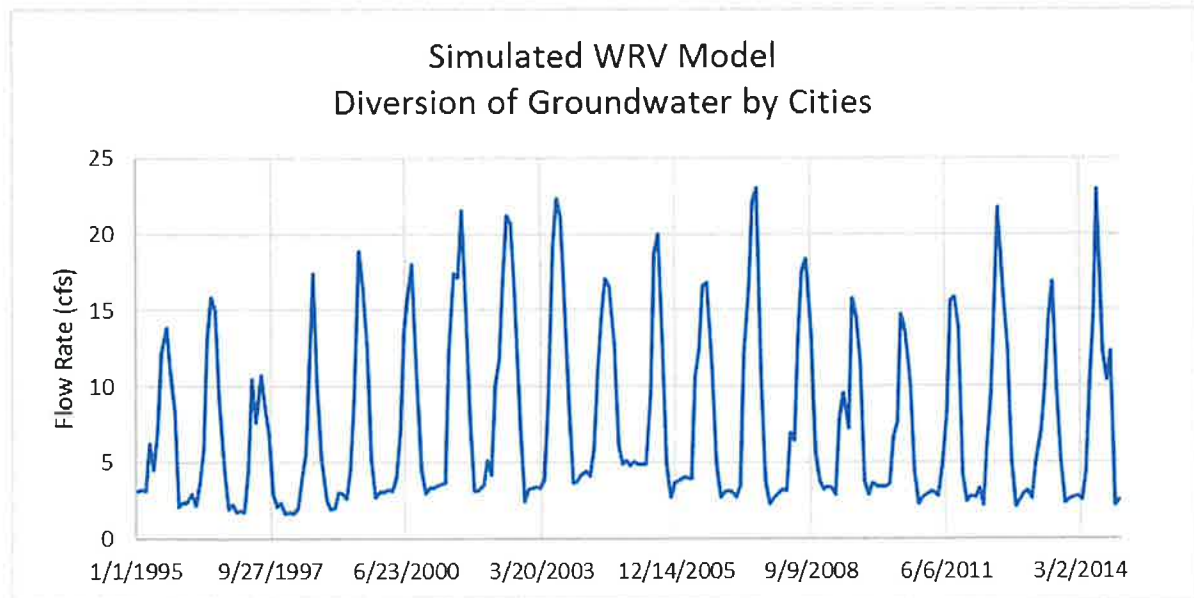
e. The difference between wet years and dry years

i. I would say that there is little to no correlation between the SWSI index and the simulated response from the modeling.

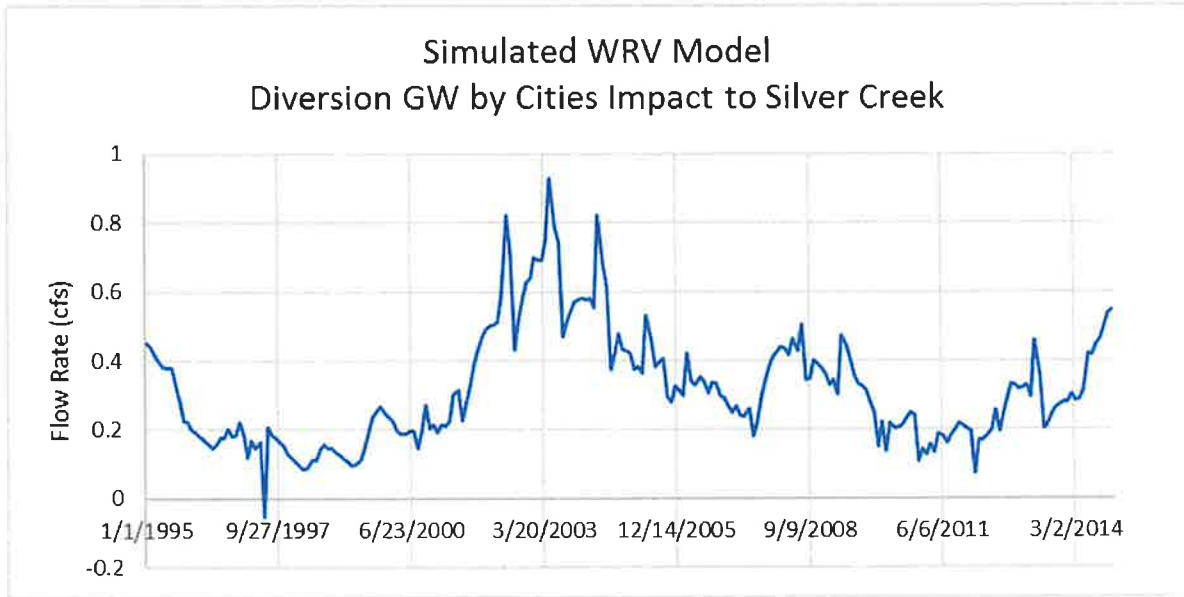


Effects of Cities Pumping

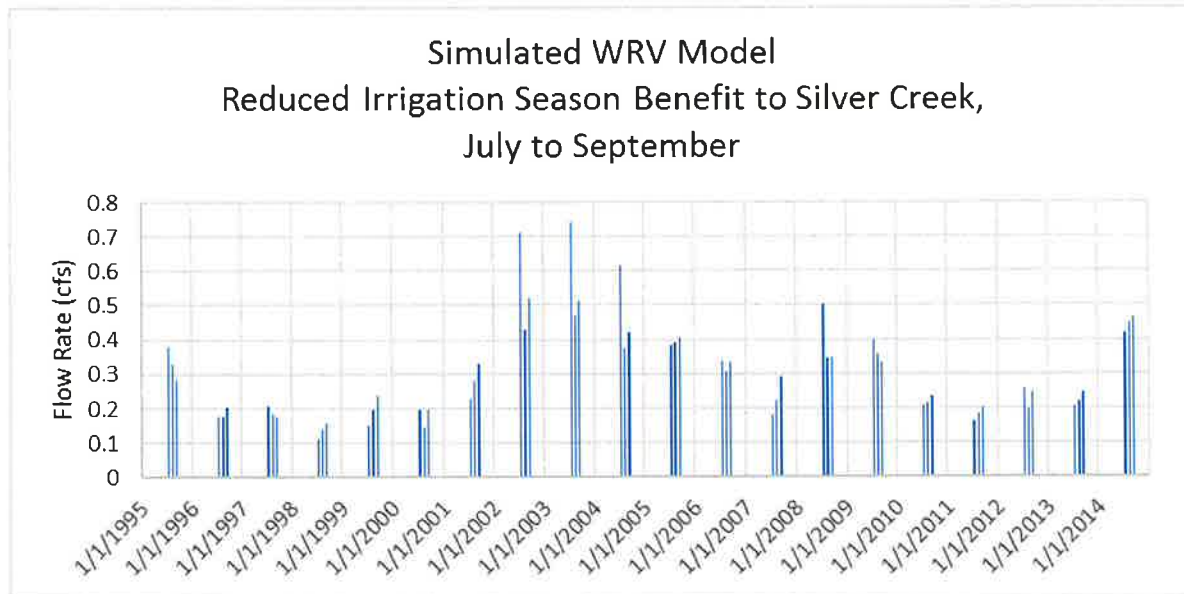
1. Use the PODs for the cities, and overlaid them to the Model. Removed well diversions from specific cells.
2. No reduction in city effluent modeled, but there is a large percentage of groundwater diversion that is not consumptively used, and returned to the Big Wood system, which is a benefit to the Big Wood River.



3. Simulated effects of groundwater diversions on surface water
 - a. Silver Creek
 - i. Annual impact to Silver Creek is 229 acft or 0.32 cfs.

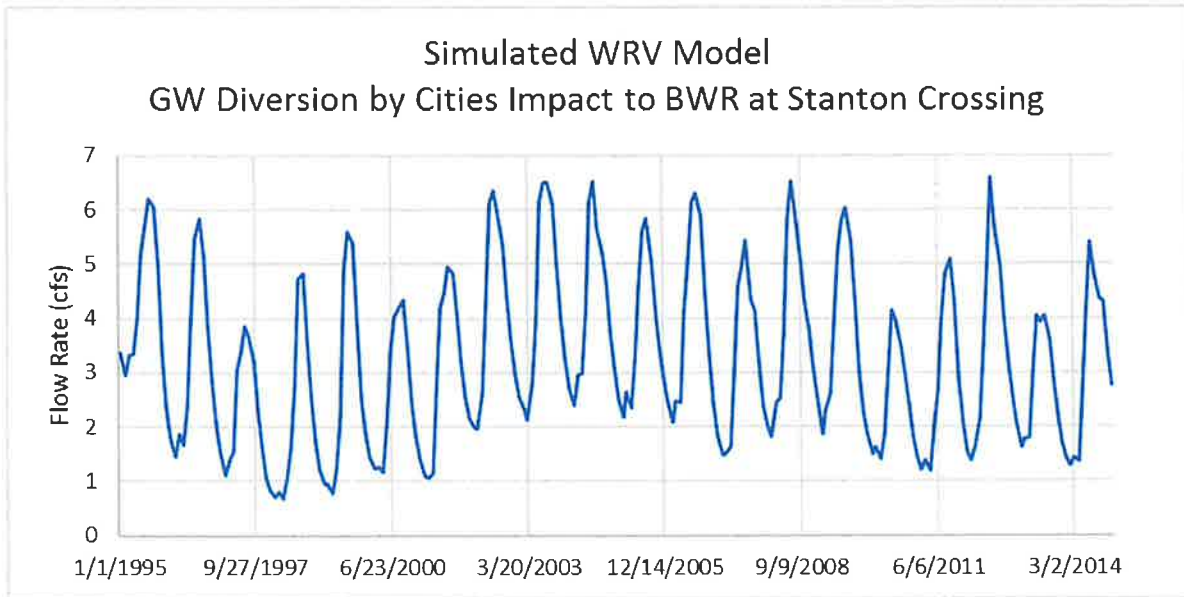


ii. July – September impact to Silver Creek is on average 56 acft or 0.31 cfs

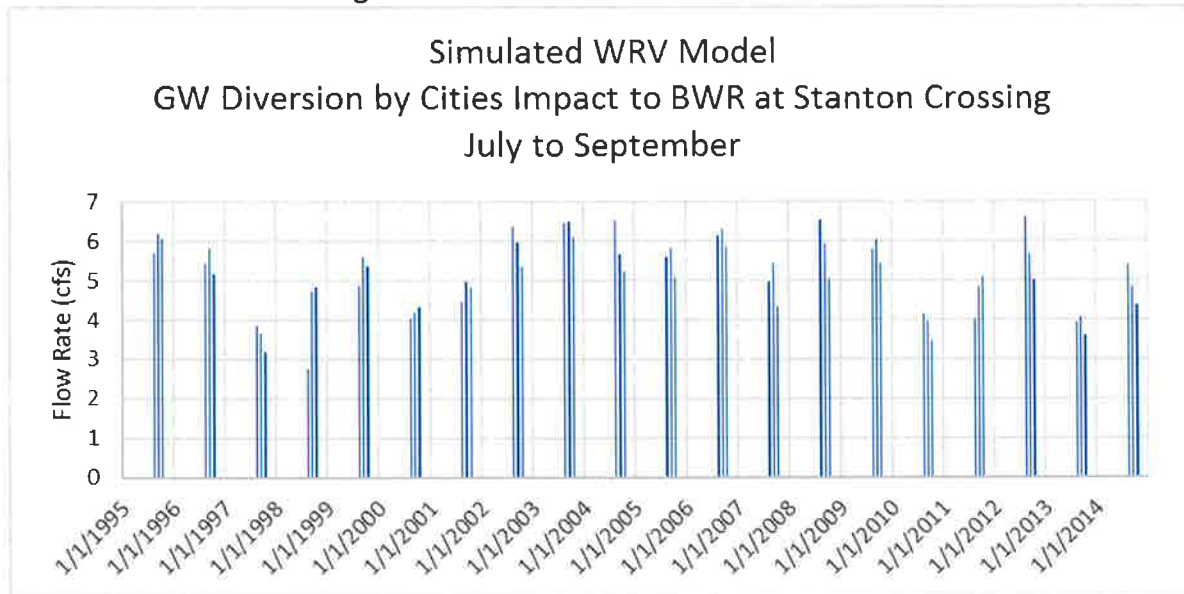


b. Big Wood River at Stanton Crossing (BWR Hailey to Stanton Crossing and Willow Creek)

i. Annual impact to Big Wood River at Stanton Crossing is 2386 acft or 3.29 cfs.

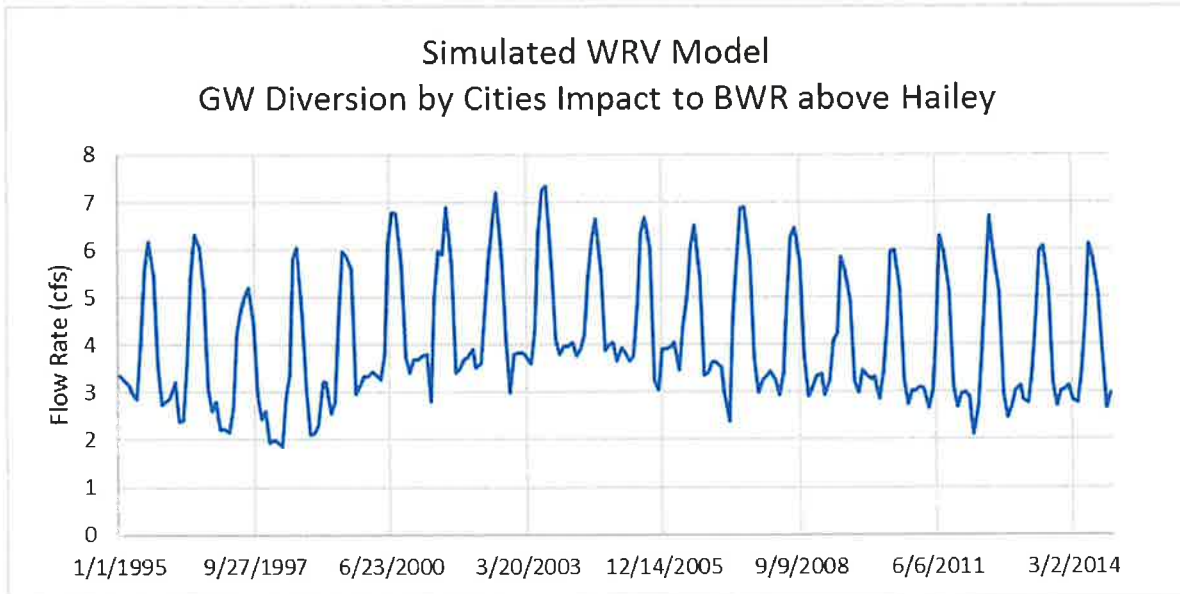


ii. July – September impact to Big Wood River at Stanton Crossing is on average 890 acft or 5.13 cfs

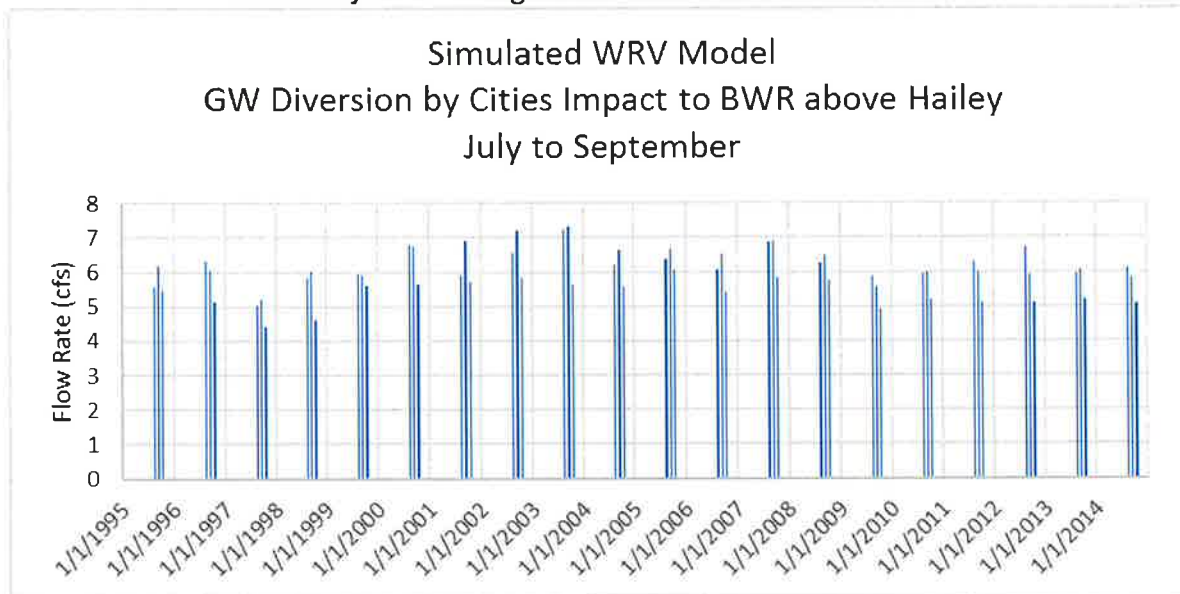


c. Big Wood River from Near Ketchum to Hailey

i. Annual impact to Big Wood River at Stanton Crossing is 2959 acft or 4.08 cfs.



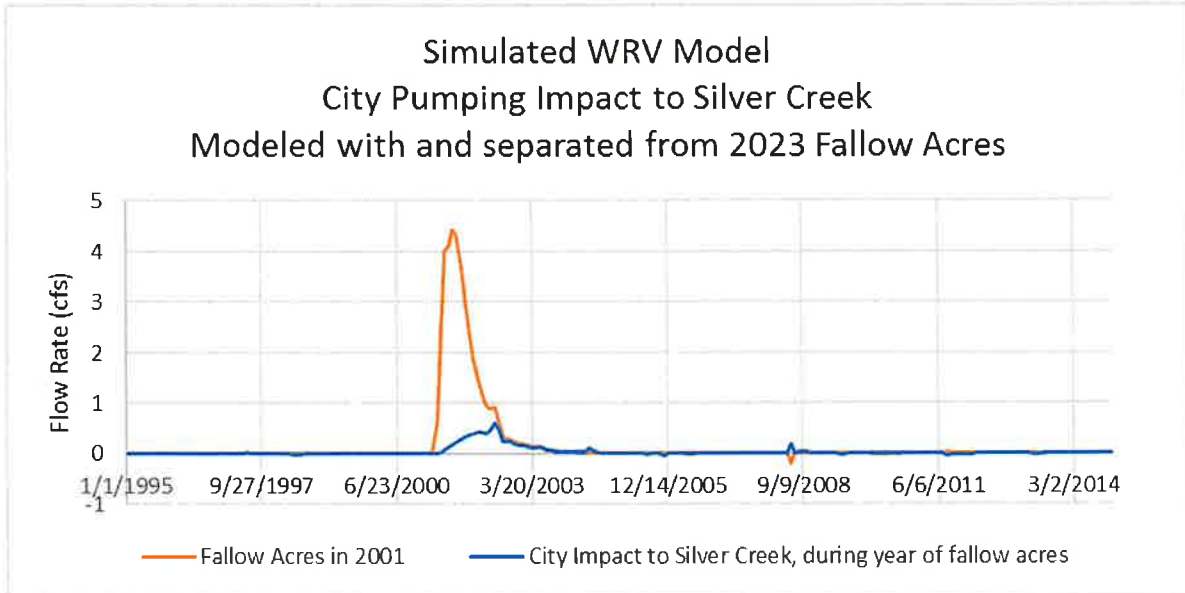
ii. July – September impact to Big Wood River from Near Ketchum to Hailey is on average 1087 acft or 5.95 cfs



d. The question was asked about the cities pumping data from 2022. I have not modeled the complexity of 2022, as the WRV model was calibrated from 1995 through 2014. Furthermore, the WRV model is not linear, which requires model runs of specific inquiries. In order to address this question, I picked out the year 2001, which has a SWSI value of -3.4, which is a dry year. I then ran the 2023 fallowed acres, and then the fallowed acres with curtailment of the cities. The results are as follows:

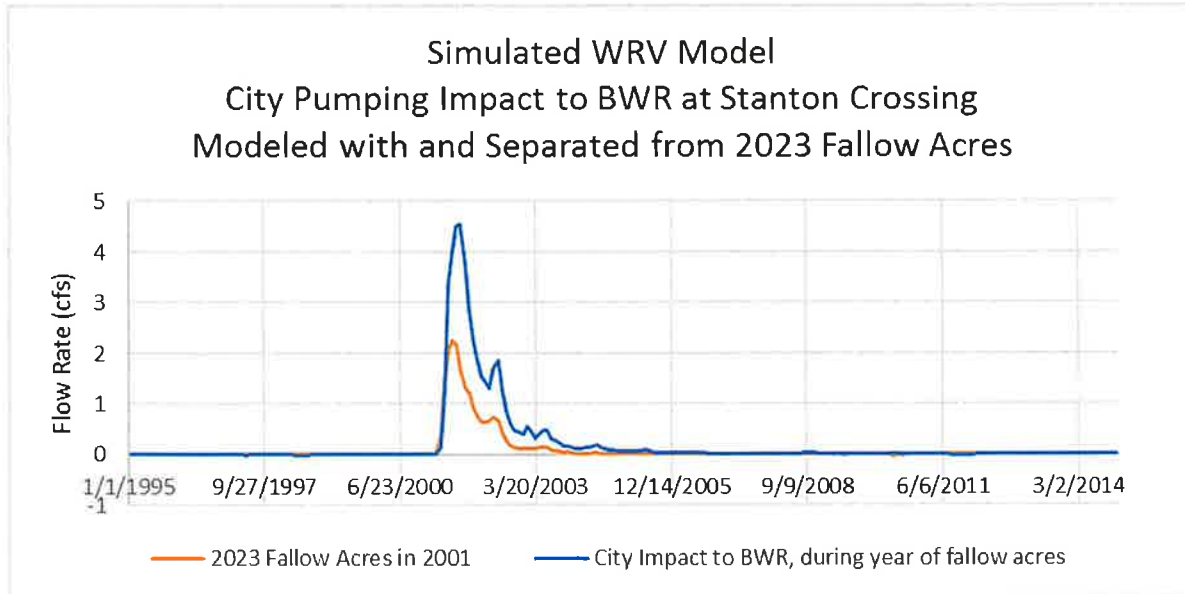
i. Silver Creek

1. Municipal impact to Silver Creek from pumping groundwater, during fallow conditions is 104 acft in 2001, 258 acft in 2002, and 68 acft in 2003.



ii. Big Wood River at Stanton Crossing

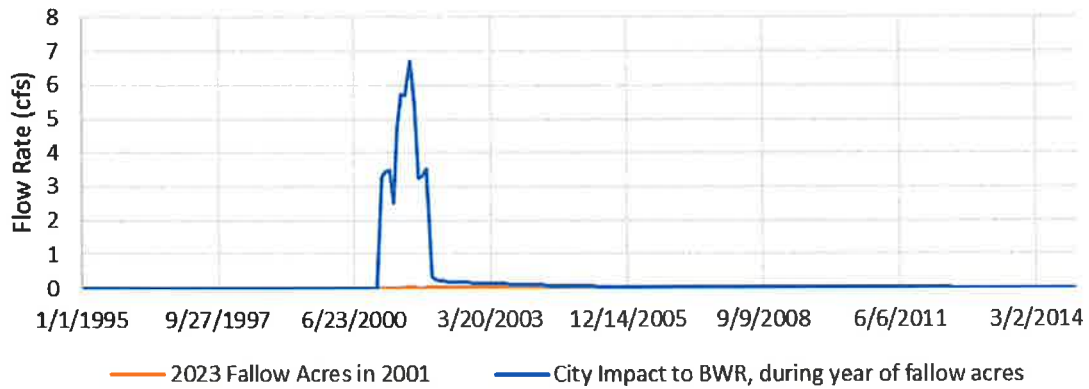
1. Municipal impact to Big Wood River at Stanton Crossing from pumping groundwater, during fallow conditions is 1620 acft in 2001, 830 acft in 2002, and 239 acft in 2003.



iii. Big Wood River from near Ketchum to Hailey

1. Municipal impact to Big Wood River from near Ketchum to Hailey from pumping groundwater, during fallow conditions is 3099 acft in 2001, 141 acft in 2002, and 88 acft in 2003.

**Simulated WRV Model
City Pumping Impact to BWR above Hailey
Modeled with and Separated from 2023 Fallow Acres**



iv. Mitigation plan contribution

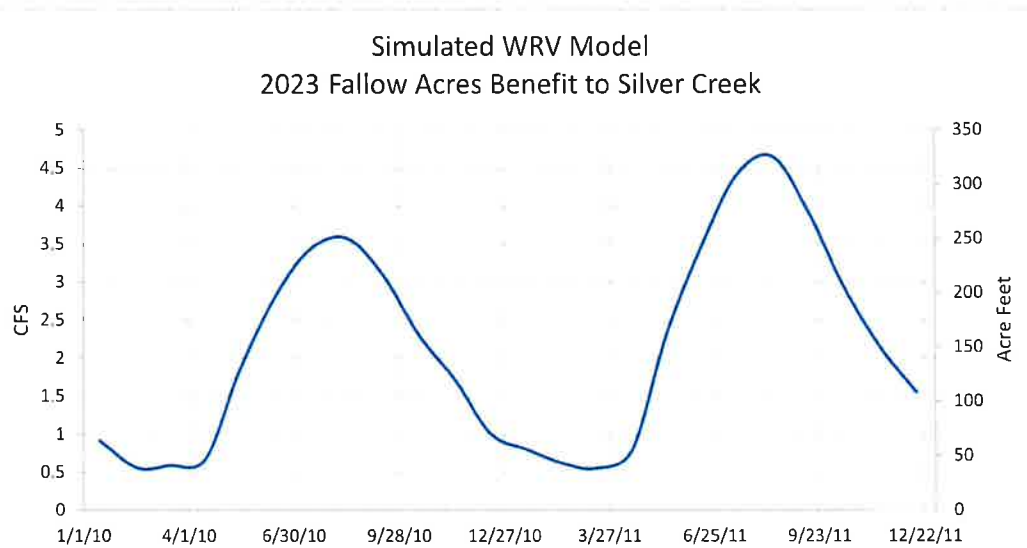
1. The cities contribution to the mitigation plan is not a technical question, but a policy or administrative question. Therefore, I am not offering an opinion.

**WRV Model Analysis of SVGWD 2023 Curtailment Acres – Supplement
DBS – February 9, 2024**

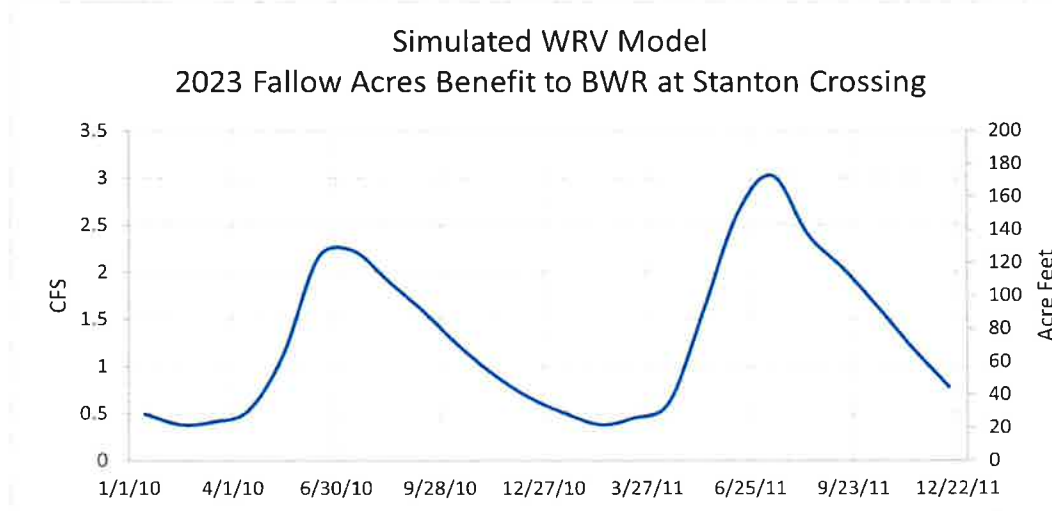
This Supplement was prepared to better illustrate the time of year the various discharge changes described in the December 11, 2023 paper by Dr. Powell would occur. In each case 2 consecutive years were chosen that represent larger and smaller impacts. The timing for all other years would be similar since the WRV Model operates on a monthly time step.

Effect of fallow on deliveries to Station 10 and to Stanton Crossing:

1. Benefit to Silver Creek

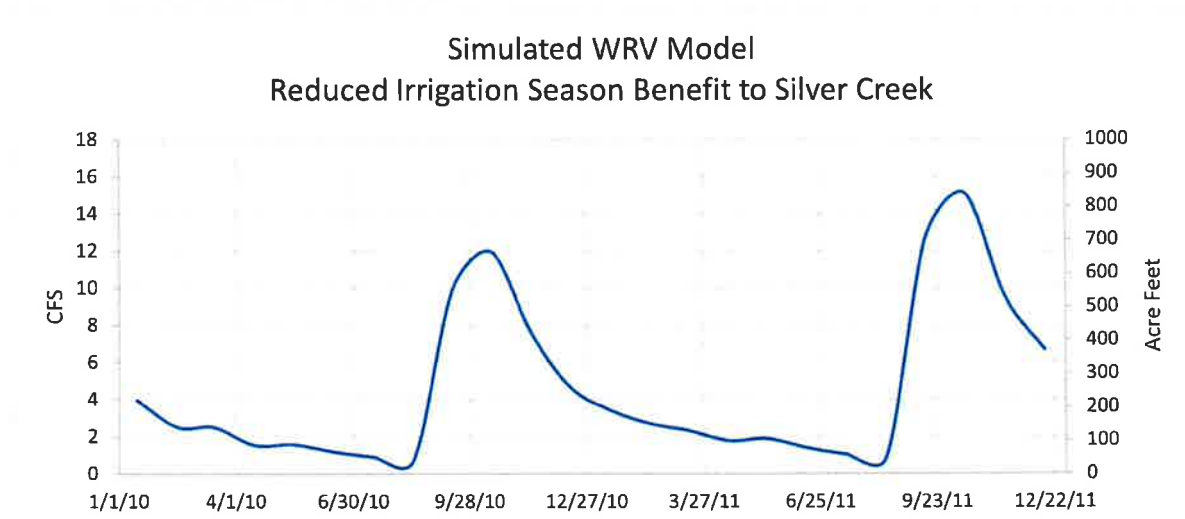


2. Benefit to Stanton Crossing (Hailey to Stanton Crossing and Willow Creek)

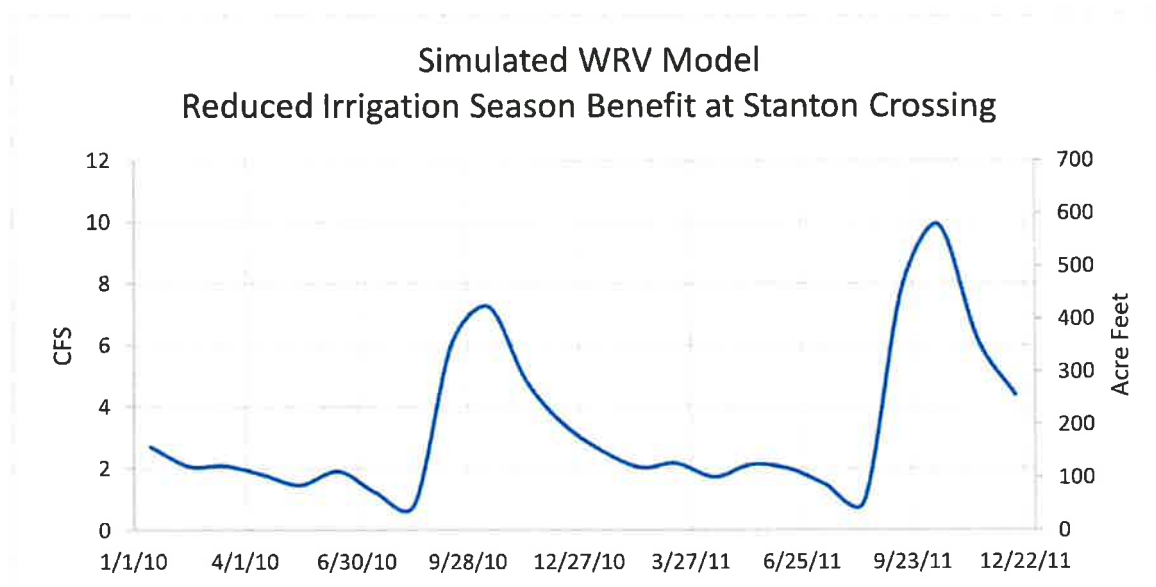


Effects of the Shortened Irrigation Season

1. Benefit to Silver Creek

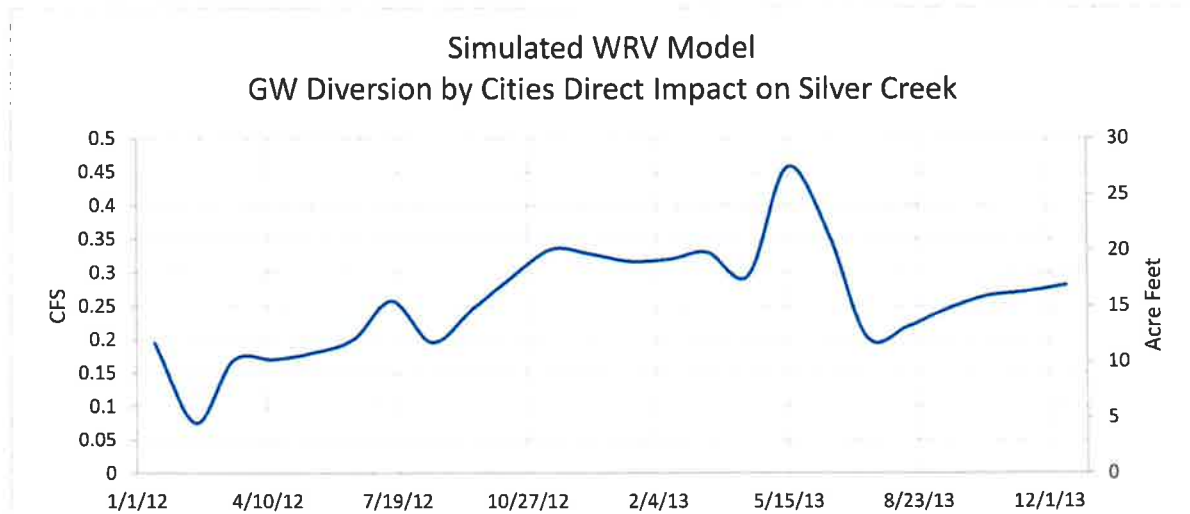


2. Benefit to Stanton Crossing (Hailey to Stanton Crossing and Willow Creek)

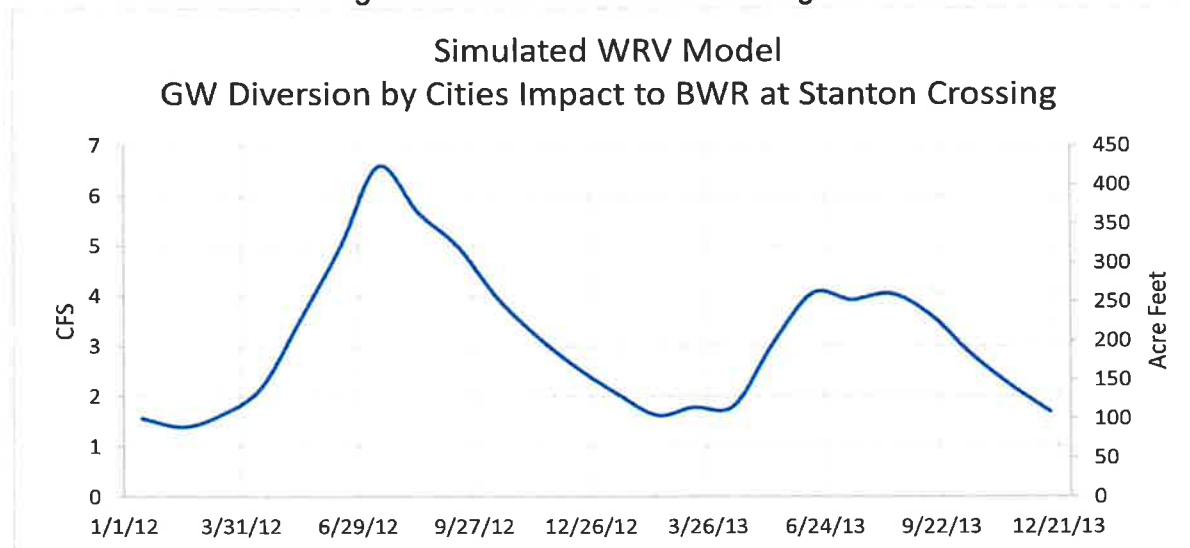


Effects of Cities Ground Water Pumping

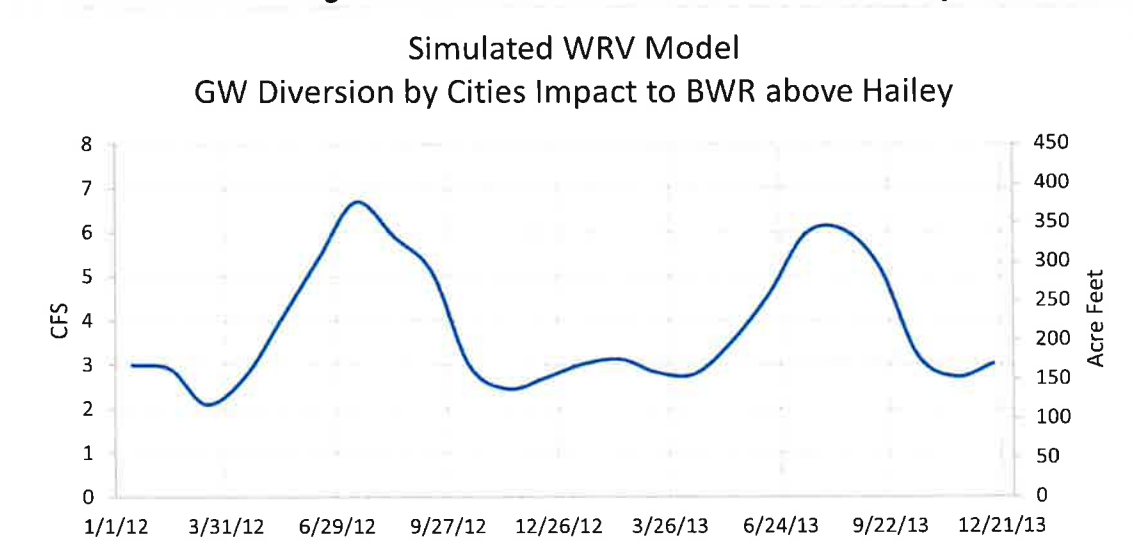
1. Direct effect on Silver Creek



2. Effect on the Big Wood River at Stanton Crossing



3. Effect on the Big Wood River from the Near Ketchum to Hailey Reach



Although the direct impact of the Cities ground water pumping on Silver Creek is relatively small, the indirect impact is much larger. The impact of the Cities ground water pumping on the Big Wood River at Hailey has a direct impact on water availability by the D45 and Baseline Canals. Both those canals divert water onto the Bellevue Triangle. A portion of those diversions is lost to seepage that recharges the ground water which ultimately increases the discharge of Silver Creek. Canal shortages resulting from ground water pumping by the Cities is typically replaced by ground water pumping in the Bellevue Triangle.

The combination of reduced ground water recharge in the Bellevue Triangle and increased ground water pumping in the Bellevue Triangle reduces the discharge of Silver Creek resulting directly from ground water pumping by the Cities.

Silver Creek – Lower Little Wood and Magic Water Supply

3-5-2024

The current FINAL BIG WOOD RIVER GROUND WATER MANAGEMENT AREA MANAGEMENT PLAN dated April 29, 2022, (Management Plan) was prepared after the 2 driest consecutive years since 1991 in the Big Wood River basin. The dryness was measured by the discharge of the Big Wood River at Hailey which is the best measure of the water supply for Silver Creek, Magic Reservoir, and the lower Little Wood River.

As expected, the focus of the current Management Plan is to supply water to the lower Little Wood River water users. The plan includes actions that are required of ground water users to maintain the discharge of Silver Creek which ultimately feeds the lower Little Wood River. Those actions were implemented in 2022 and were mostly successful in maintaining the target discharge of 32 cfs at Station 10 on the lower Little Wood River.

The 2023 water supply was a timely reminder that the water supply of the Big Wood River varies widely and can provide adequate water for ground water users, Silver Creek and the lower Little Wood River water users and Magic Reservoir. In 2023 the Watermaster records show there were no priority cuts on either Silver Creek or the lower Little Wood River and Magic Reservoir filled.

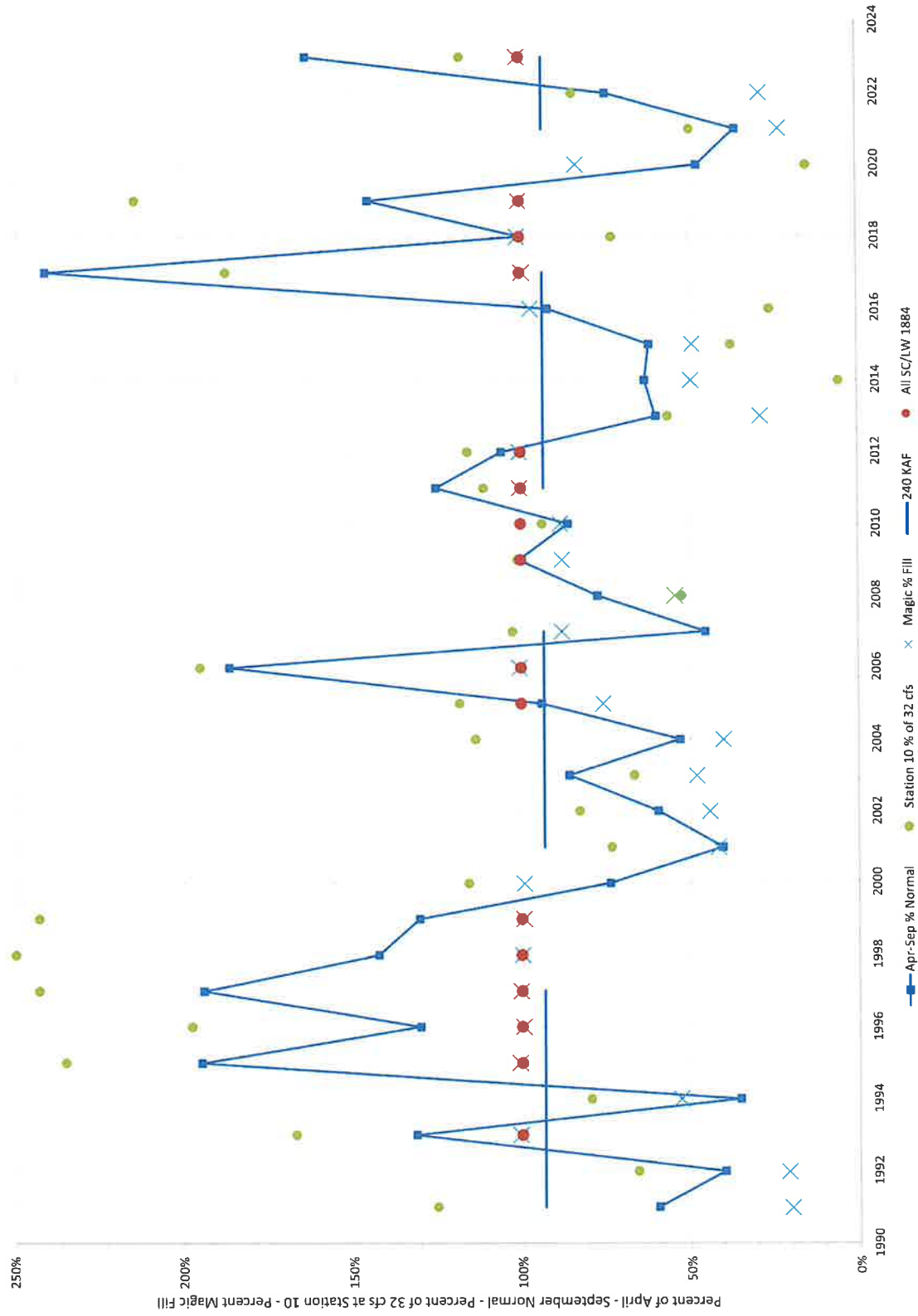
The attached chart shows the years in which all the 1884 water rights on Silver Creek and the lower Little Wood River were satisfied the entire irrigation season. The chart begins with 1991 since that is when the prior moratorium was placed on ground water development in the upper Big Wood River basin. The percentage scale shows the percent of normal April – September discharge at Hailey, 257 KAF, the percent of the 4-day rolling average of 32 cfs at Station 10 and the percent of fill for Magic Reservoir.

As described above, in 2023 the Hailey discharge was over 150% of normal, the 4-day rolling average discharge at Station 10 was more than 32 cfs, all the 1884 water rights on Silver Creek and the lower Little Wood were satisfied for the irrigation season and Magic Reservoir filled. A review of the chart shows this situation occurs about half the time suggesting there is a legitimate reason to amend the Management Plan to allow utilization of the available water supply by both senior surface water users and ground water users.

Based on the analysis displayed in the attached chart, when the April – September discharge of the Big Wood River at Hailey is 240 KAF or greater, history shows the 1884 and senior water rights are fully satisfied, the 4-day rolling average 32 cfs is available at Station 10 and Magic Reservoir has an adequate water supply. With these conditions satisfied, the ground water land fallowing, delayed irrigation season start, early irrigation season shutoff and purchased storage deliveries are not needed. See Memos dated December 11, 2023 and February 9, 2024 in further support of these actions.

Ground water users will continue to monitor the 32 cfs at Station 10 to be certain the 4-day rolling average is maintained, the CIEF contributions and cloud seeding efforts are to be continued in all years.

Big Wood River at Hailey, Little Wood at Station 10 and Magic Fill



Owner	Source	WRN	Priority	Q	Use	Acres	Cut Dates				Δ Days			
							2022	2002	1937	1931	22/37	02/37	02/31	
ALTON & PAULA HUYSER TRUST	Little Wood River	37-10561A	5/5/1884	4	Irrigation		7/28-9/21	5/15-6/3/7/16	-	6/2-6/11/7/21	54	-37	95	15
ALTON & PAULA HUYSER TRUST	Little Wood River	37-10561B	5/5/1884	2.2	Irrigation	311.6	7/28-9/21	5/15-6/3/7/16	-	6/2-6/11/7/21	54	-37	95	15
MATHENEY, JOE	Little Wood River	37-1125	5/20/1908	3.2	Irrigation	21	6/30	5/15	5/14	4/15	47	-76	-1	-30
MATHENEY, MELISSA	Little Wood River	37-21135	4/15/1985	0.78	Irrigation	23.2	6/30	5/15	5/14	4/15	47	-76	-1	-30
NEWELL, CHARLES E	Little Wood River	37-321	4/30/1884	3	Irrigation	173	-	5/15-6/3/7/16	-	7/21	-	-72	95	24
7 MILE RANCH LLC	Little Wood River	37-344A	4/6/1883	4	Irrigation	219.9	-	-	-	-	-	-	-	-
BARBARA FARMS LLC	Little Wood River	37-432	4/15/1885	2.6	Irrigation	54	7/28	5/15-6/3/7/9	5/15-6/19/6/25-7/1/7/20-9/12	5/8	-33	-81	7	-43
NEWELL, CHARLES E	Little Wood River	37-471	4/30/1884	2	Irrigation	100	-	5/15-6/3/7/16	-	7/21	-	-72	95	24
MATHENEY, JOE	Little Wood River	37-472	4/1/1884	1.2	Irrigation	48.9	-	7/23	-	7/24-8/17	-	-25	69	45
MATHENEY, MELISSA	Little Wood River	37-49	4/1/1883	4.2	Irrigation	215.7	-	-	-	-	-	-	-	-
HUBSMITH, KAYSI	Little Wood River	37-973	4/1/1884	2	Irrigation	82	-	7/23	-	7/24-8/17	-	-25	69	45
SHARON; HUBSMITH, RODNEY FRED	Little Wood River	37-423	4/1/1883	0.3	Irrigation	299	-	-	-	-	-	-	-	-
RODNEY FRED	Little Wood River	37-424	4/1/1884	2.2	Irrigation	299	-	7/23	-	7/24-8/17	-	-25	69	45
SHARON; HUBSMITH, RODNEY FRED	Little Wood River	37-425	4/1/1887	2.2	Irrigation	299	6/30	5/15-6/3/7/1	5/14-9/26	4/30	-42	-61	-25	-43
SHARON; HUBSMITH, RODNEY FRED	Little Wood River	37-425	4/1/1887	2.2	Irrigation	299	6/30	5/15-6/3/7/1	5/14-9/26	4/30	-42	-61	-25	-43

This table was prepared to compare the water availability on the Little Wood River in 2022 and 2002 to water availability in 1937 and 1931. The 1937 and 1931 years were selected because the Water District records are available for those years. The 2002 year was selected as a recent low water supply year and 2022 was selected as the first year of the current Management Plan. The water rights included are intended to show how various priority dates were regulated in the selected years.

The dates in the center portion of the table show the dates the priorities were curtailed and if a second date appears separated by a hyphen (-) it indicates that priority was turned back on. A single date indicate the right was off for the season. The right side of the table shows the number of days difference in the time the priority for each water right was on. For example in the column 22/37 the number 54 indicates that water right was on 54 more days in 1937 than in 2022. Similarly, the -37 in the 22/31 column indicates that right was on for 37 more days in 2022 than in 1931. The last 2 columns compare the water delivery in 2002 with 1937 and 1931. Overall, the priority dates of these rights stayed on longer in 2022 than either 1937 or 1931 and in 2002 some rights stayed on longer than in 1937 or 1931.