Big Wood River Ground Water Management Area Advisory Committee
April 7, 2021 Meeting Materials

1. Water Supply Update April 7, 2021
2. Response to IDWR Observations dated March 17, 2021 from the Galena Ground Water District and South Valley Ground Water District, March 24, 2017 Response to IDWR Observations dated March 17, 2021-**IDWR Responses, April 5, 2021**

Water Supply Update

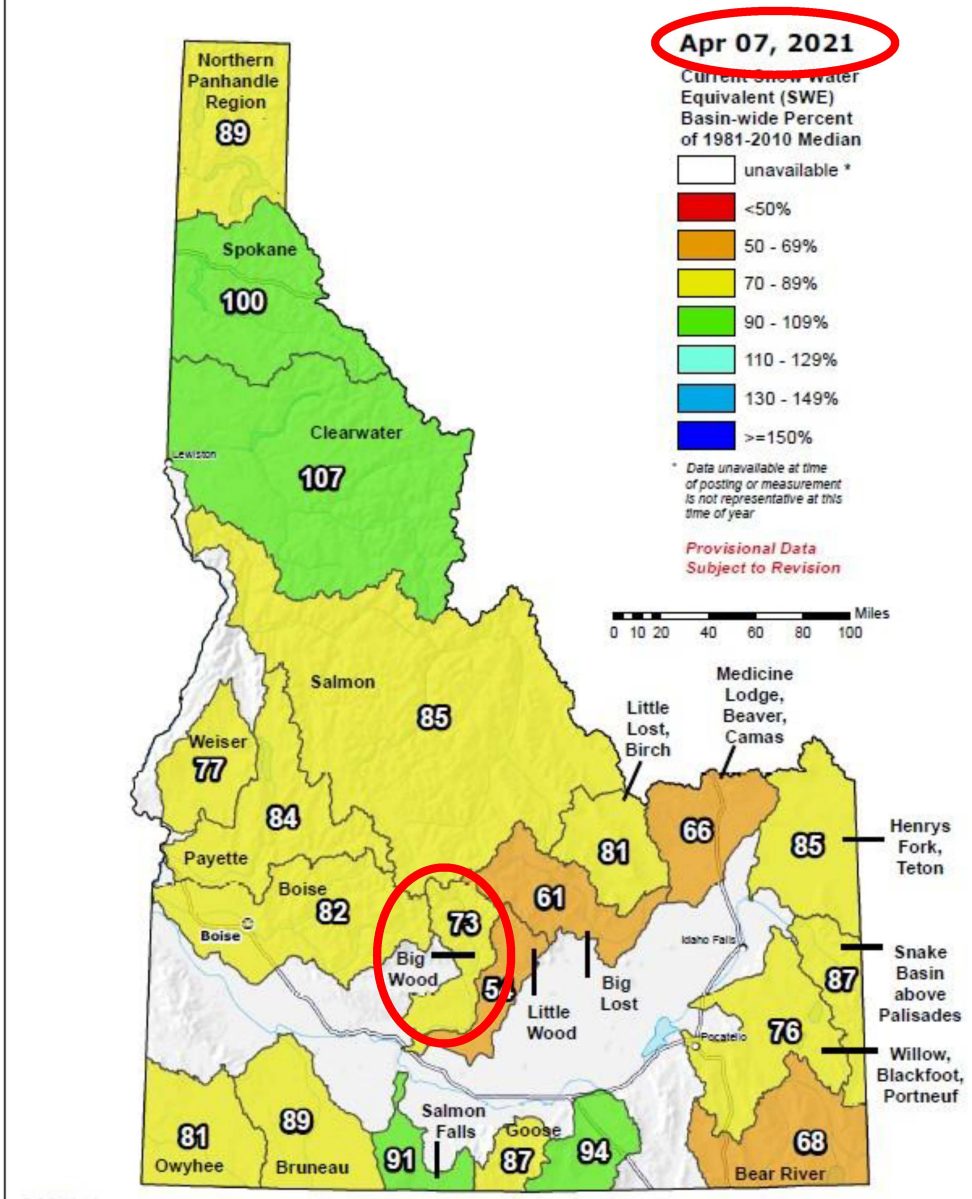
Presented to the Big Wood River GWMA Advisory Committee by Sean Vincent
April 7, 2021

Talking Points

- April Surface Water Supply Index table not yet published
  - Expected later this week

- April 7 Big Wood Snow Water Equivalent (SWE) map indicates decline since March 15

Idaho SNOTEL Current Snow Water Equivalent (SWE) % of Normal



USDA NRCS

The snow water equivalent percent of normal represents the current snow water equivalent found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first reading of the day (typically 00:00).

Prepared by:
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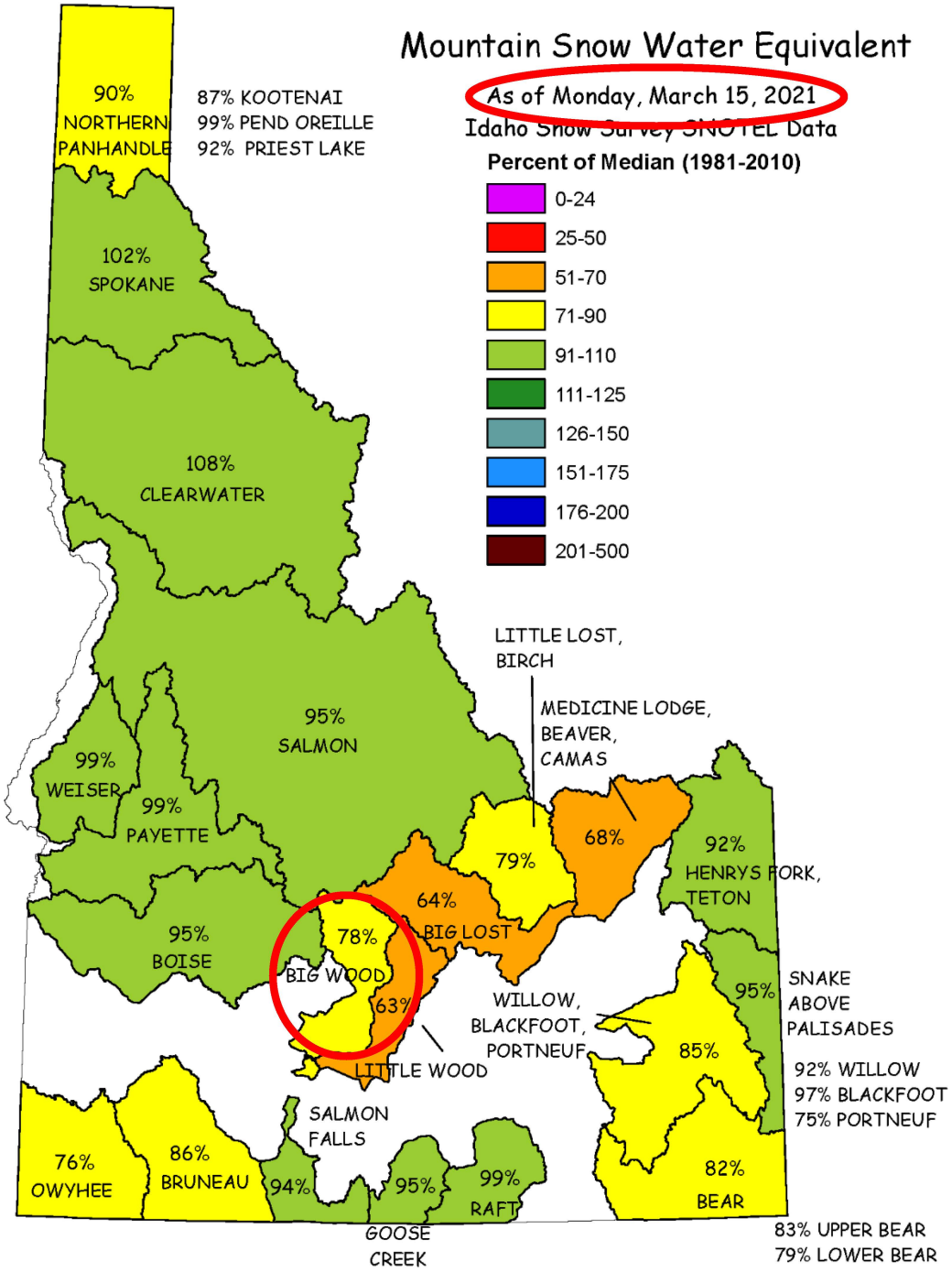
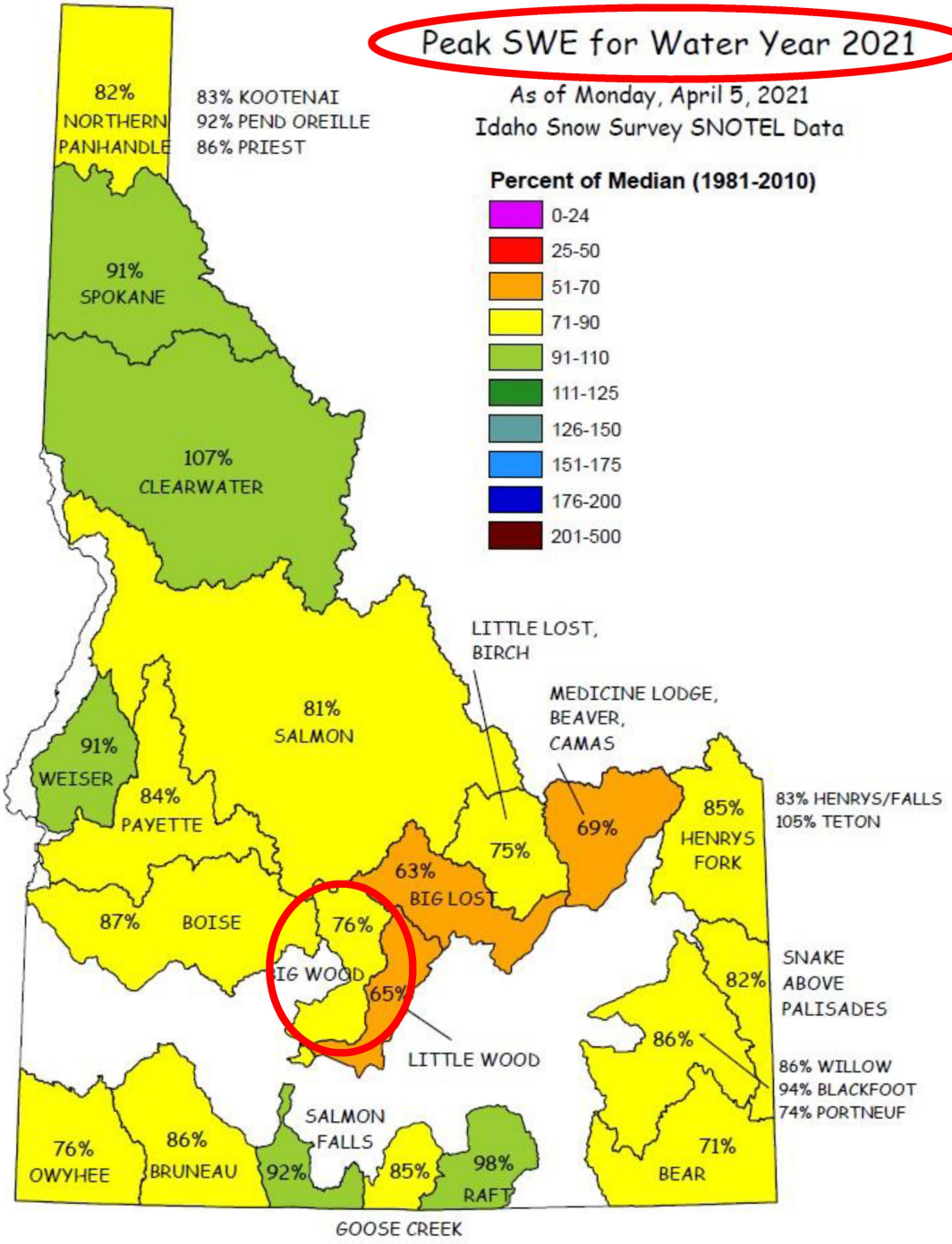

Mountain Snow Water Equivalent
As of Monday, March 15, 2021
Idaho Snow Survey SNOTEL Data
Percent of Median (1981-2010)
0-24
25-50
51-70
71-90
91-110
111-125
126-150
151-175
176-200
201-500
90%
NORTHERN
PANHANDLE
87% KOOTENAI
99% PEND OREILLE
92% PRIEST LAKE
102%
SPOKANE
108%
CLEARWATER
95%
SALMON
LITTLE LOST,
BIRCH
MEDICINE LODGE,
BEAVER,
CAMAS
99%
WEISER
99%
PAYETTE
95%
BOISE
79%
68%
92%
HENRYS FORK,
TETON
64%
BIG LOST
78%
BIG WOOD
63%
LITTLE WOOD
WILLOW,
BLACKFOOT,
PORTNEUF
95%
SNAKE
ABOVE
PALISADES
85%
92% WILLOW
97% BLACKFOOT
75% PORTNEUF
SALMON
FALLS
76%
OWYHEE
86%
BRUNEAU
94%
95%
99%
RAFT
82%
BEAR
GOOSE
CREEK
83% UPPER BEAR
79% LOWER BEAR

Talking Points

- April Surface Water Supply Index table has not yet been published
  - Expected later this week
- April 7 Big Wood Snow Water Equivalent (SWE) map indicates decline since March 15
  - Peak SWE considered better indicator after runoff begins


Peak SWE for Water Year 2021
As of Monday, April 5, 2021
Idaho Snow Survey SNOTEL Data
Percent of Median (1981-2010)
0-24
25-50
51-70
71-90
91-110
111-125
126-150
151-175
176-200
201-500
82%
NORTHERN
PANHANDLE
83% KOOTENAI
92% PEND OREILLE
86% PRIEST
91%
SPOKANE
107%
CLEARWATER
81%
SALMON
LITTLE LOST,
BIRCH
MEDICINE LODGE,
BEAVER,
CAMAS
91%
WEISER
84%
PAYETTE
87%
BOISE
75%
69%
85%
HENRYS
FORK
83% HENRYS/FALLS
105% TETON
63%
BIG LOST
76%
IG WOOD
65%
LITTLE WOOD
82%
SNAKE
ABOVE
PALISADES
86%
86% WILLOW
94% BLACKFOOT
74% PORTNEUF
76%
OWYHEE
86%
BRUNEAU
SALMON
FALLS
92%
85%
98%
RAFT
71%
BEAR
GOOSE CREEK

Talking Points

- April Surface Water Supply Index table has not yet been published
  - Expected later this week
- April 7 Big Wood Snow Water Equivalent (SWE) map indicates decline since March 15
  - Peak SWE considered better indicator after April 1
- SWSI value may decline as result of poor March snowpack accumulation

Big Wood River Basin SWSI

Adequate Water Supply Greater than 0.4 SWSI or 275 KAF

Station ID	Station Name	Period	Data Type	Years	# of Years	
13142500	Big Wood R blw Magic Reservoir	Apr-Sep	strm	1991-2020	30	Units KAF
13142000	Magic Reservoir	28-Feb	resv	1991-2020	30	Units KAF

ENSO Classification
SE Strong El Nino - EN Mild El Nino - N Neutral - LN Mild La Nina - SL Strong La Nina

Rank	Year	Enso	Stream Flow Apr-Sep	Reservoir 28-Feb	Streamflow + Reservoir Sum	Non-Exceedance Probability	SWSI
1	2017	LN	710	99	808	97%	3.9
2	2006	N	636	62	699	94%	3.6
3	1997	N	605	78	683	90%	3.4
4	1998	SE	427	163	590	87%	3.1
5	1999	SL	420	120	540	84%	2.8
6	1995	SE	518	16	534	81%	2.6
7	2019	N	424	89	513	77%	2.3
8	1996	N	351	127	478	74%	2.0
9	2011	SL	322	91	412	71%	1.7
10	2018	LN	204	171	375	68%	1.5
11	1993	EN	355	14	369	65%	1.2
12	2012	LN	238	128	365	61%	0.9
13	2000	N	165	111	277	58%	0.7
2021 10% Chance Exceedance Forcast		?	240	27	267	56%	0.5
14	2010	EN	167	82	250	55%	0.4
15	2009	N	219	30	249	52%	0.1
16	2016	SE	187	36	223	48%	-0.1
17	2005	EN	194	26	219	45%	-0.4
18	2008	N	178	24	202	42%	-0.7
19	2020	?	56	135	190	39%	-0.9
2021 30% Chance Exceedance Forcast		?	158	27	185	37%	-1.1
20	2007	EN	60	124	184	35%	-1.2
21	2003	EN	140	23	163	32%	-1.5
22	2015	EN	79	61	140	29%	-1.7
23	2002	N	120	19	139	26%	-2.0
2021 50% Chance Exceedance Forcast		?	112	27	139	24%	-2.2
24	2014	N	84	49	133	23%	-2.3
25	1994	SE	31	86	117	19%	-2.6
2021 70% ??? edance Forcast		?	74	27	101	18%	???
26	1991	N	76	22	98	16%	-2.9
27	2013	N	66	28	93	13%	-3.1
28	2004	N	66	23	89	10%	-3.4
29	2001	LN	38	48	87	6%	-3.6
2021 90% Chance Exceedance Forcast		?	32	27	59	5%	-3.8
30	1992	EN	24	27	51	3%	-3.9

Magic Reservoir

04/7/2021
Level in acre feet- 34,244
Inflow in cfs- 201.30
outflow in cfs- 1.87

According to our research and data, Magic Reservoir is currently looking at somewhere between 60-80 days of water delivery. These numbers are subject to change as snow melts and more data is available. We will be posting updated estimates each Monday as more information is gathered.


Thank You!

Response to IDWR Observations dated March 17, 2021

From the GGWD and SVGWD
March 24, 2017

Observations

(IDWR Responses in Italics, April 5, 2021)

5) NRCS states that the "adequate water supply" for the Big Wood is 275 KAF. The adequate water supply for the Big Wood above Hailey is 135 KAF. What do these numbers mean, are they the amounts to fill water rights or actual need?

IDWR response: There is a hyperlink in the observations document to a page on the NRCS website that includes a brief description of the adequate water supply. Ron Abramovich, who is formerly with the NRCS, indicated that the adequate water supply values were developed in consultation with irrigation entity representatives back in the mid-90s. Some of the values were reportedly revised downward in 2011 based on increases in irrigation efficiency.

What area is included in the Big Wood above Hailey water supply estimate?

IDWR response: The Big Wood above Hailey SWSI value is calculated for the Big Wood River at Hailey gage site (USGS 13139510). IDWR has not discussed this specific SWSI with the NRCS but we assume the "adequate water supply" volume for the Big Wood above Hailey is for irrigation with surface water in the Wood River Valley.

8) IDWR identified maximum reservoir fill for SWSI greater than 1 and less than -1. What about between 1 and -1? This includes over 25% of the 30-year period.

IDWR response: Observation 15 describes four years with SWSIs between -1 and 1 (2005, 2016, 2009, and 2010) and includes hyperlinks to the reservoir storage graphs for each of those years. Here are hyperlinks to the reservoir storage and reservoir release graphs for the eight years with March SWSIs between -1 and 1:

Year	March SWSI	Hyperlink to Reservoir Storage	Hyperlink to Reservoir Releases
2012	0.9	2012 storage	2012 releases
2000	0.7	2000 storage	2000 releases
2010	0.4	2010 storage	2010 releases
2009	0.1	2009 storage	2009 releases
2016	-0.1	2016 storage	2016 releases
2005	-0.4	2005 storage	2005 releases
2008	-0.7	2008 storage	2008 releases
2020	-0.9	2020 storage	2020 releases

What about the projection for 2021 based on the NRCS March 1 report?

IDWR response: The NRCS does not project reservoir fill. The March SWSI for 2021 is the sum of the end of February reservoir storage and the projected April through September natural flow volume. As mentioned in the March 24 presentation to the GWMA Advisory Committee, the April SWSI is a better, albeit later, forecast of the total supply for the coming year since it is computed by summing the end of March reservoir storage and the predicted April through September natural flow volume.

12) Uninterrupted reservoir releases for 147-days doesn't tell the volume of water released. Did the management of the reservoir release more water early in years that releases were interrupted?

IDWR response: With the exception of 2015, releases that began more than a week prior to May 1 were not observed for any of the 15 years with negative SWSI values. 2015 reservoir releases began during the second part of April but the reservoir was shut down again for approximately two weeks during the second half of May. The 2015 season ended at the end of July, which is approximately two months early.

Did releases account for water passed through the reservoir for senior downstream natural flow water rights?

IDWR response: Water rights were not considered for this observation.

13) Typical midseason diversion rate of 900 cfs is not necessary all season long, especially in spring and fall conditions. What is the average diversion rate required?

IDWR response: IDWR does not know the answer to this question.

Is 900 cfs required to push water through the delivery system?

IDWR response: Based on past communication with the BWCC manager, David Stephenson, IDWR understands that BWCC likes to maintain a flow of about 900 cfs from the reservoir for delivery of water through their system.

Is the 900 cfs inclusive of senior natural flow water delivered through the reservoir?

IDWR response: Releases from Magic Reservoir during the irrigation season should include the available natural flow for delivery of senior priority rights on the Big Wood River below the reservoir as determined by the WD37 watermaster.

15) Were temperature data checked for 2005 and 2016 to determine if an early freeze was the cause of the early water shutoff from Magic Reservoir?

IDWR response: Temperature is not measured at the Big Wood River below Magic Reservoir gage (USGS 13142500).

16) It is unclear how Magic Reservoir is able to store water during the irrigation season during poor water years when their storage water right would not be in priority against senior downstream natural flow irrigation water rights.

IDWR response: Water right priorities were not considered in developing this observation.

17) What are the data used to determine shortages, significant or not, occurred during those 13 years with the lowest SWSI?

IDWR response: A shortage in this context means that there was not enough water in the reservoir to provide for releases through the normal irrigation season (May 1 through either September 25 or October 1).

18) No data or discussion are provided to explain the operation of Magic Reservoir. Are operations conducted in anticipation of needs in ensuing years?

IDWR response: This question may be addressed by the BWCC. However, *IDWR's dam safety records includes a copy of the Magic Reservoir Operating Guide (NRCS, 1996). Although potentially outdated, the guidance document includes procedures, rule curves, and worksheets for optimizing reservoir operations based on NRCS streamflow forecasts. IDWR notes that the adequate water supply volume in the guidance document is consistent with the March 2021 SWSI table but the adequate water supply SWSI value has changed, which is to be expected since the SWSI value that was determined in 1996 was based on a different 30-year historical record.*

Was consideration given for the reservoir evacuation in 2012/2013 for maintenance?

IDWR response: Yes (see below).

Did those operations influence water storage in 2014?

IDWR response: Dam repairs that were conducted during October and November 2012 (link to newspaper article on dam repairs) would likely not have had an impact on 2014 because the April-September 2013 natural flow was only 84 KAF and the reservoir had been emptied in 2013 approximately 3 months before the normal end of the irrigation season.

21) Matching the AFRD2 place of use to the BWCC place of use was early recognition of the typically short water supply for BWCC. The AFRD2 was formed and the Milner-Gooding Canal was constructed to offset frequent water shortages in the area served by the BWCC and to help provide a more reliable water supply to BWCC and river right irrigated land.

IDWR response: IDWR agrees with this factual statement.

22) AFRD2 also has available a natural flow water right from the Snake River for up to 1,700 cfs in addition to the 393,550 AF of space in American Falls Reservoir. When American Falls Reservoir fills, AFRD2 has access to the full 1,700 cfs while the right is in priority.

IDWR response: This is a valid point. AFRD2's 1,700 cfs natural flow right was mentioned during the presentation to the GWMA Advisory Committee on March 24.

Observations 22 and 23 were intended to point out that AFRD2 water users have a relatively reliable water supply by virtue of AFRD2's storage contract. In good water years, AFRD's natural flow right adds volume to the overall supply and allows AFRD2 to avoid using storage. But even without the natural flow right, AFRD2 irrigators have a more reliable water supply than those who depend on storage in Magic Reservoir.

24) Why was 170 KAF picked as a substantially filled volume? In observation 15, IDWR observed that Magic Reservoir filled to 145 KAF for years around the SWSI value of 0.

IDWR response: 170 KAF was chosen, somewhat subjectively, because it's 90% of reservoir capacity rounded to the nearest 5 KAF.

25) Camas Creek does play an important role in filling Magic Reservoir. There are fewer surface water rights on Camas Creek than the Big Wood River, so in years of scarcity, the impact from Camas Creek may be even more.

IDWR response: Like the Wood River Valley, deliverable surface water rights on Camas Creek and tributaries during the irrigation season are senior to Magic Reservoir storage rights.

26) Please explain why ground water use reductions to Camas Creek are treated as reductions to reach gains but ground water use in the Wood River Valley are treated as reductions in flow in the Big Wood River and Silver Creek.

IDWR response: Consumptive groundwater use is not treated differently. In both basins, consumptive groundwater use reduces aquifer reach gains in hydraulically connected stream segments. Because of reduced reach gains, there is less flow in the streams.

27) Assuming 85% consumptive use for groundwater diversions is not justified and is high. For example, the highest diverters in 2019 and 2020 within the Big Wood Valley were municipalities. While all cities irrigate, they also return a substantial amount of in-house water to the system.

A uniform consumptive use value for all diverters in the valley is not justified or supported.

Using the consumptive use values from the simulation of continuous curtailment in Item 34, the annual consumptive use in the model area is about 27,000 AF. Assuming the diversions in the 1995 to 2014 period to be similar to the 2016 to 2019 period the overall consumptive use appears to be closer to 60% instead of 85%.

IDWR response: IDWR agrees there is uncertainty regarding the efficiency of various water users and acknowledges that assuming an average efficiency of 85% yields a very coarse estimate of consumptive use for 2016 to 2019. Comparing 1995 to 2014 with 2016 to 2019 also provides an uncertain estimate of efficiency, because climatic conditions and irrigation practices were not the same during these two time periods. Also, the model assumed irrigators with surface water rights were using surface water

when it was in priority. This may have resulted in an underestimate of groundwater consumptive use.

30) What kind of disposal systems are in place for the municipal water users in WD37? Ground water depletions vary widely for municipal water users depending on the method of sewage treatment and disposal by the municipal water users.

IDWR response: The City of Ketchum, Sun Valley Water and Sewer District, City of Hailey, and The Meadows discharge treated effluent to the Big Wood River. The City of Bellevue uses a land application site and infiltration ponds. The quantity of water discharged at these facilities was accounted for in the calculation of aquifer recharge during calibration of WRV V1.1. For the WRV V1.1 curtailment scenario, the portion of groundwater diversions routed through wastewater treatment plants was not included in the model simulation of consumptive use, because this portion of the diversions is considered to be offset by the discharge to the Big Wood River or infiltration to the aquifer. Only irrigation consumptive use within the municipal services areas was modeled in the curtailment scenario. This assumption does neglect the impacts of the portion of the City of Bellevue diversions that are consumptively used by evapotranspiration at the land application site.

Please describe how the 5,400 AF of ground water diversion by exempt water users was estimated. What portion of the exempt water use was for exempt irrigation use?

IDWR response: The 5,400 AF was incorrect. The estimated groundwater diversion by exempt domestic users is 3,100 AF/yr. This was estimated by multiplying the number of licensed single-home domestic water rights and single-home domestic well logs (1,924) by 1.6 AF/yr.

Consumptive use associated with exempt domestic irrigation use was estimated to be 1,900 AF assuming 1.0 AF/yr of irrigation consumptive use per home. For comparison, in the WRV V1.1 model the exempt domestic irrigation consumptive use in 2007 was estimated to be 2,300 AF.

Ground water uses by commercial users and homeowners associations should not be included with irrigation uses for agricultural crops.

IDWR response: Only irrigation consumptive use in subdivisions and commercial areas is simulated in the WRV V1.1 groundwater flow model and the curtailment simulation. In-home and commercial uses are assumed to be non-consumptive and to return to the aquifer via septic systems.

31) Does the exempt domestic ground water use in excess of 800 AF/YR within WD37B include ground water use by/within Fairfield?

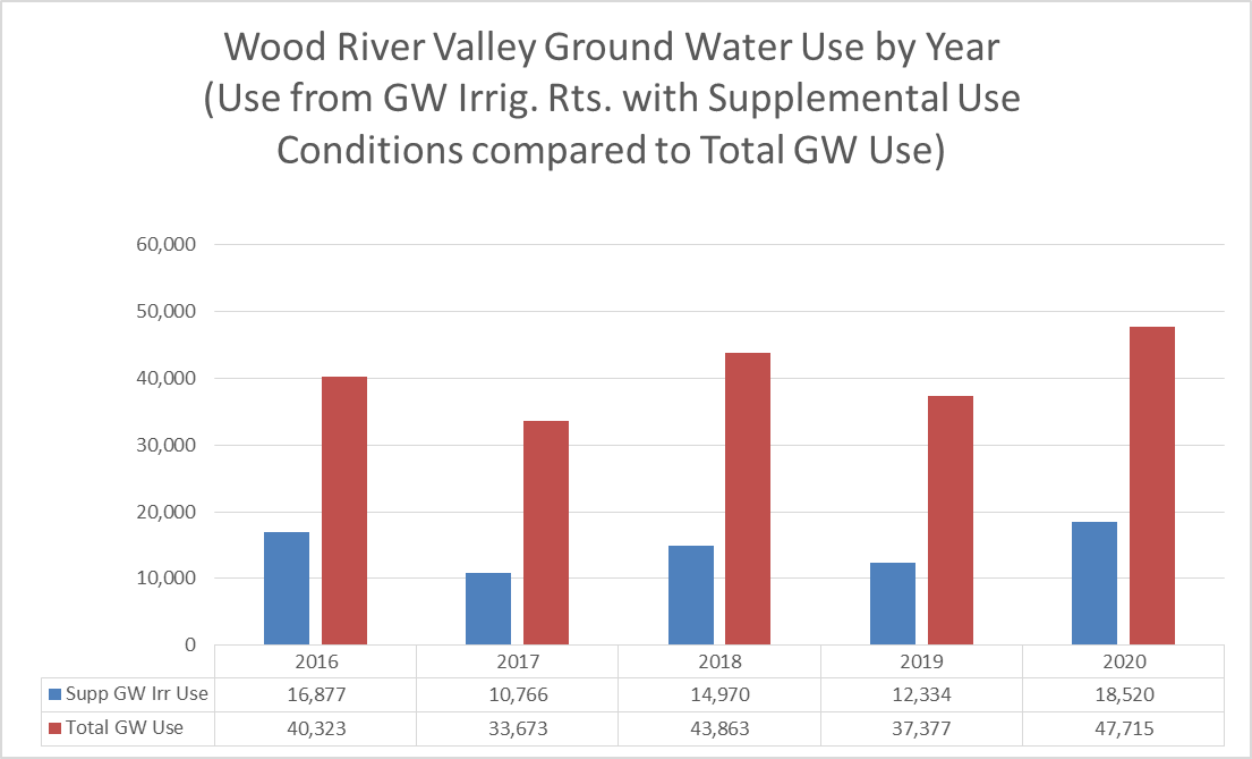
IDWR response: Exempt domestic groundwater diversions in WD37B were estimated by multiplying the number of licensed single-home domestic water rights and single-

home domestic well logs (524) by 1.6 AF/yr. The 800 AF/yr does not include municipal or public water system diversions.

33) Please explain how the portion of ground water diverted as supplemental in Figure 2 was determined.

IDWR response: IDWR queried all groundwater rights within the BWRGWMA that include supplemental use conditions that are the same or similar to the conditions described to the BWRGWMA Advisory Committee on January 5, 2021. IDWR then linked the points of diversions under those groundwater rights with the well identification numbers in IDWR's Water Measurement Information System (WMIS) database that are used by water districts to report annual groundwater diversion data. WD37 watermaster Kevin Lakey enters annual groundwater diversion volumes for wells in WD37 and the BWRGWMA. The supplemental ground water diversion data presented in Figure 2 represents the reported annual volumes for wells in WD37 and the BWRGWMA that have associated groundwater rights with supplemental use conditions.

The total and supplemental groundwater use volumes reported in Figure 2 were based on WMIS queries and reports completed in mid-January 2021. Since that time, Kevin Lakey updated or corrected some data for both 2020 and 2021. Subsequently, IDWR has updated the graph and table for Figure 2 as shown below.



	2016	2017	2018	2019	2020
Supp GW Irr Use	16,877	10,766	14,970	12,334	18,520
Total GW Use	40,323	33,673	43,863	37,377	47,715

Figure 2: Wood River Valley Groundwater Diversions by Year, including Supplemental Groundwater Diversions

34) The WRV 1.1 ground water model for the Wood River basin north of Timmerman Hills is the best available tool to evaluate the interactions of ground water and surface water sources within the model boundaries. Given that the model was developed and calibrated for the period before measured ground water diversion data are available, how reliable are the estimates of ground water curtailment quantities for lands for which the ground water rights are supplemental? How were supplemental ground water rights identified? How was the amount of ground water diverted for supplemental uses quantified?

IDWR response: Locations with both groundwater and surface water rights for irrigation or municipal use were identified using IDWR water right place of use records. For model development, locations covered by both groundwater and surface water rights were considered to be mixed source lands whether or not the groundwater water right(s) included a formal "supplemental use" condition. Groundwater rights that share combined limits with surface water rights were identified by querying IDWR's water right database for combined limit conditions. The combined limit information was used to apportion groundwater irrigation demand spatially within canal service areas based on surface water priority cuts.

When and where surface water was available, the calculation of groundwater consumptive use is dependent on estimates of canal seepage and the efficiency of surface water irrigation use. If canal seepage loss estimates are low and surface water efficiency estimates are high, then groundwater consumptive use estimates will be low. If canal seepage loss estimates are high and surface water efficiency estimates are low, then groundwater consumptive use estimates will be high. Also, calculations for the model assumed irrigators with surface water rights were using surface water when it was in priority. If this is not the case, it may have resulted in an underestimate of groundwater consumptive use.

Groundwater consumptive use for the WRV V1.1 curtailment scenario was, in most areas, equal to the groundwater irrigation demand calculated from evapotranspiration and precipitation data and surface water availability as described in the model documentation (https://pubs.usgs.gov/sir/2016/5080/sir20165080_appendixG.pdf; https://idwr.idaho.gov/files/projects/wood-river-valley/20141204-Calculating-Incidental-Recharge-Irr-Lands.pdf, For municipal service areas, where recorded groundwater and surface water diversions exceeded the volume of water needed to meet irrigation demand, groundwater consumptive use was estimated by multiplying the irrigation demand (ET less precipitation) by the ratio of net groundwater supply (groundwater diversions less wastewater treatment plant effluent) to total net water supply (surface water diversions plus groundwater diversions less wastewater treatment plant effluent). Recorded diversions with places of use in the municipal service area were included in this calculation, regardless of whether or not the water rights are owned by the municipality. Diversions from springs were considered to be diversions from a surface water source.

The junior priority groundwater tool, used to compile the well files for the curtailment scenario simulations, provides model users the flexibility to simulate the impact of other estimates of groundwater consumptive, if desired, by editing the input file containing the monthly consumptive use of groundwater for each irrigation entity.

It appears the WRV 1.1 projections for changes in the discharge of Willow Creek were incorrectly included in the Wood River above the Dry Bed instead of the Wood River below the Dry Bed. Making that change reduces the Wood River above Dry Bed gain to 7,000 AF and increases to 4,900 AF the gain to the Wood River below the Dry Bed.

IDWR response: This comment was retracted by David Shaw via an email to Tim Luke dated 3/26/2021.

35) In this item it again appears the gain to Willow Creek was incorrectly added to the Wood River above the Dry Bed instead of to the Wood River below the Dry Bed. The same incorrect addition appears to have occurred in both the irrigation season analysis and the non-irrigation season analysis.

IDWR response: This comment was retracted by David Shaw via an email to Tim Luke dated 3/26/2021.

36) The same incorrect addition identified in Items 34 and 35 occurred in this example.

IDWR response: This comment was retracted by David Shaw via an email to Tim Luke dated 3/26/2021.

37) Annual comparisons can be misleading when both values used in the comparison vary widely throughout the year.

IDWR response: While IDWR does not disagree with the comment, observations 37 and 38 were developed to allow for a comparison of the general scale of the impacts of consumptive groundwater use.

38) Magic is not entitled to all water below the Dry Bed since senior downstream irrigation water rights must be filled ahead of Magic.

IDWR response: During the March 24, 2021 meeting discussion, Watermaster Kevin Lakey stated that additional gains to the Big Wood below Dry Bed reach, which includes Willow Creek, would not result in additional surface water diversions above Magic Reservoir and would result in increased inflow to Magic Reservoir. Water rights in this reach, located primarily on Willow and Spring Creeks, have senior priority dates and are already filled.

41) IDWR apparently made separate runs of the WRV 1.1 model for 2002 and 2014. Those model runs should be made available for review. See comments in Item 34 about model calibration.

IDWR response: The model files were made available on IDWR's SFTP site on 3/26/2021. IDWR notified the groundwater districts and others that the files were placed on its SFTP site.

42) The watermaster, through personal communication to IDWR, states that there are so many more senior water rights above Magic, that it has been impractical to administer the basin as a whole. (IDWR, 2015 Memo)

IDWR response: IDWR does not dispute this statement. This statement either supports or adds clarification to IDWR observation no. 42.

43) On October 29, 2012 Magic held over 55,000 AF but on December 8, 2012 had reduced the contents to less than 13,000 AF and Magic did not fill during the 2013 water year. How does this activity impact the 2014 water supply for Magic? BWCC released water from Magic Reservoir in the winter of 2012 to repair a leaking oil line at the power plant. BWCC patrons claimed that BWCC released 54,000 AF that winter that could have been stored if not for the problems with the power plant.

IDWR response: IDWR observation no. 43 reports the priority cut dates made by the WD37 watermaster in 2014 as found in the WD37 watermaster records (see WD37 Water Distribution and Hydrometric Works., 2014, page J.)

The activity described in the statement above did not affect the WD37 watermaster's determination of natural flow water right priority cuts in 2014. The described activity may have affected storage carryover in 2013. The activity would likely not have had an impact on 2014 storage because the April-September 2013 natural flow was only 84 KAF and the reservoir had been emptied in 2013 approximately 3 months before the normal end of the irrigation season.

44) Assumes absolute timing and quantity of the WRV model. Model calibration report does not support absolute conclusion. See appendix A, https://idwr.idaho.gov/files/projects/wood-river-valley/20190627-Groundwater-Flow-Model-forthe-Wood-River-Valley-Aquifer-System.pdf . We acknowledge that the WRV model is the best tool that is available, but the regional model still has imperfections and cannot predict exact values with certainty.

IDWR response: IDWR acknowledges there is uncertainty with respect to both the timing and quantity of model predictions, but it is the best available scientific tool designed for this purpose. The WRV V1.1 groundwater flow model was recalibrated in 2019 to incorporate additional water level and streamflow data, specifically to reduce uncertainty in the timing of predicted responses to the extent possible with available data. Even with the recalibration, IDWR acknowledges the model does not predict exact values with absolute certainty. Neither do other groundwater flow models and statistical models currently used as predictive tools to support water administration in Idaho.

Estimating extending the priority cuts of the surface water by the watermaster is outside of the scope of the WRV model.

IDWR response: The WRV V1.1 groundwater flow model was not used to extend the priority cuts. Output from the groundwater flow model was used as input to an additional analysis completed using information from the watermaster to predict how the additional streamflow would affect priority cuts.

Further, extending priority cuts does not automatically mean there would be a demand for additional water. Thus far, surface water users have not quantified shortages that could, potentially, be the result of ground water pumping within the BWRGWMA.

IDWR response: Based on WD37 watermaster delivery records and priority cuts for recent dry years that may be similar to 2021, it is very likely that there will be a demand for additional water in 2021 on both the Big and Little Wood Rivers, and Silver Creek. Both IDWR and the WD37 watermaster anticipate significant cuts to senior priority surface water rights in 2021. Any water added to these streams could extend both priority cuts and beneficial use of water.

45) The 2002 priority cut data is more reasonable to use, since it wasn't influenced by the artificial draining of the reservoir that occurred in 2012/2013. We acknowledge that the WRV model is the best tool that is available, but the regional model still has imperfections and cannot predict exact values with certainty. Estimating extending the priority cuts of the surface water by the watermaster is outside of the scope of the WRV model.

Further, extending priority cuts does not automatically mean there would be a demand for additional water. Thus far, surface water users have not quantified shortages that could, potentially, be the result of ground water pumping within the BWRGWMA.

IDWR response: See responses to #43 and #44

Conclusions

1) How many irrigators rely solely on water from Magic Reservoir? Do some irrigators who receive water from Magic Reservoir have additional water supplies? What are the supplies? How reliable are they?

IDWR response: IDWR does not have a count of the number of irrigators who rely solely on water from Magic Reservoir. IDWR understands that there are a limited number of irrigators who receive water from Magic Reservoir who may also have decreed river rights and supplemental groundwater rights. See also response #5, No Observations Made, below.

2) When water from Magic Reservoir is inadequate how do irrigators make up the shortage or can they?

IDWR response: IDWR understands that storage water from Magic Reservoir is used on lands within its service area located above the Milner Gooding Canal. Some individual land owners in this area may hold groundwater rights to supplement their own land.

4) There is also some indication Magic Reservoir receives inflow directly from the underflow from the Camas Prairie aquifer.

IDWR response: USGS researchers and available water level data suggest Magic Reservoir may receive some inflow directly from the Camas Prairie aquifer. Unlike the aquifer discharge to lower Camas Creek, which IDWR has measured in recent seepage surveys, it is not possible to measure and quantify aquifer discharge to Magic Reservoir.

5) How many of the BWLWWUA receive or could receive water from AFRD2? AFRD2 also has natural flow from the Snake River in addition to storage in American Falls Reservoir.

IDWR response: IDWR lacks sufficient information to accurately address the first question of this item. However, IDWR is aware that many privately owned water rights from the Big Wood River and Little Wood River, and located below the Milner-Gooding Canal, include a condition stating that delivery of the rights are subject to water exchange provisions contained in contracts executed between the Bureau of Reclamation, AFRD2 and BWCC. IDWR assumes water rights with this condition are appurtenant to lands that receive water from AFRD2. There are 75 water rights on the Big Wood-Malad River below the Milner Gooding Canal, and 38 water rights from the Little Wood River that have this condition. There are a number of rights from the Big and Little Wood Rivers below the Milner-Gooding Canal that do not include this condition. IDWR assumes the holders of those rights do not receive water from AFRD2 for the same lands.

See IDWR response to observation #22 with respect to the second question in this item.

7) See comments above about the continuous curtailment WRV 1.1 model run, limitations and incorrect reporting of the results.

IDWR response: See responses to #34, 35 and 36.

8) See comments above about potential impact on 2014 Magic Reservoir water supply due to maintenance activity in 2012/2013.

IDWR Response: See IDWR responses above to #18 and 43.

9) See comments above concerning use of the WRV 1.1 ground water model for water administration purposes. The WRV 1.1 ground water model is the best tool available to understand the connection between surface and ground water in the Wood River Valley, but the model was not designed for water administration purposes.

IDWR response: As described in the introductory paragraph in the January 2014 Design Objectives Document, the Wood River Valley Groundwater Flow Model was "intended for use as a tool to assist water-resource managers and planners in administration and management of water resources in the Wood River Valley". The intended use of the model for conjunctive administration was also part of the first design objective.

No shortage data have been provided showing the effects of ground water pumping are creating shortages greater than those that occurred historically. There is no certainty changes to the discharge of Silver Creek at the Sportsman Access gage will reach the Little Wood River due to the channel conditions upstream of Highway 93.

IDWR response: See IDWR responses to #5, No Observations Made, below.

Agree it would be futile to attempt to deliver simulated increases in discharge in the below Dry Bed reach of the Big Wood River to water users below Magic.

No Observations Made

1) The wetland area near Highway 93 may make any attempt to deliver water from Silver Creek to the Little Wood River futile. A significant water loss has been measured in this segment of Silver Creek. What effect does water loss in this area below the Triangle have on Little Wood water supplies?

IDWR response: IDWR concurs that it did not include observations about losses on Silver Creek downstream of the Bellevue Triangle. IDWR does not agree that the wetland area along Silver Creek near Highway 93 renders delivery of water to the Little Wood River futile during the irrigation season. However, IDWR acknowledges that stream channel maintenance in this vicinity, if properly permitted, may help reduce or minimize channel losses during critical periods of the irrigation season.

2) Restrictions of the model, 2019 Model scenario report: "Because increased (streamflow in some reaches may be rediverted by surface water right holders prior to leaving the model area, and because of the complexity of water rights administration, the prediction of anthropogenic responses to increases in streamflow and the potential effects of those actions on the aquifer are beyond the scope of this scenario."

IDWR response: In IDWR's observations, WRV V1.1 groundwater flow model predictions of increased streamflow in the Big Wood River above the Dry Bed were not considered to be available to downstream users because they may be re-diverted prior to leaving the model area. Groundwater flow model predictions of increased streamflow in the Big Wood River below the Dry Bed and Silver Creek were used as input to an additional analysis completed using information from the watermaster to predict how the additional streamflow would affect water availability for Magic Reservoir water users and Silver Creek/Little Wood water users.

3) The integration of AFRD2 water into the BWCC and BWLWWUA areas needs to be fully vetted. In particular the BOR contracts appear to require that AFRD2 water be made available to all BWCC and certain river right users and that an exchange is to take place for lands above the Milner-Gooding Canal. Are these requirements being carried out, and if so how, and what effect does the availability of AFRD2 water for these lands have on the water supply in the Big Wood and Little Wood?

IDWR response: IDWR understands the groundwater districts submitted a list of questions to BWCC and ARFD2 regarding this and other questions related to the BOR contracts. IDWR anticipates these questions will be more fully addressed by BWCC and ARFD2.

4) No observations were made of water leaving the BWCC and AFRD2 service areas (spill) or the amount of spill near Gooding and to what extent that water could be captured and used to benefit the water users in those service areas.

IDWR response: IDWR concurs that it did not include observations about system spills or return flows. IDWR staff prepared information about system return flows and river

reach gains for the BWRGWMA Advisory Committee meeting on January 5, 2021 (see meeting materials for 1/5/2021 meeting). Key observations included in this presentation address the extent that return flows can be used for delivery of natural flow water rights in the system. Specifically, IDWR observed that the "Big Wood River – Malad River reach between Stations 9 and 21 is typically a gaining reach due to return flows. Gains plus unused flow injected to the river from X Canal (NSCC) should be sufficient to satisfy decreed priority rights in this reach and two ditches below Station 21." Note: Station 21 is the USGS gage on the Malad River below the confluence of the Big and Little Wood Rivers. Station 9 is a WD37 gage near Gooding just upstream of the point where the NSCC X Canal discharges to the Big Wood River.

5) No observations of ground water available for the BWCC and BWLWWUA lands, primary or supplemental.

IDWR response: IDWR concurs that it did not include observations about available groundwater supply for lands that receive water from the BWCC or from Big Wood River or Little Wood River natural flow rights. However, IDWR's memo dated August 31, 2015 posted on IDWR's BWRGWMA Advisory Committee page includes a listing of all surface water rights included in the BWLWWUA 2015 Delivery Call. IDWR identified six of the 91 surface water rights in that delivery call has having overlapping groundwater rights.