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DEPARTMENT OF
WATER RESOURCES

Thomas J. Budge (ISB# 7465)
Elisheva M. Patterson (ISB#11746)
RACINE OLSON, PLLP
201 E. Center St. / P.O. Box 1391
Pocatello, Idaho 83204
Ph: (208) 232-6101
tj@racineolson.com
elisheva@racineolson.com

Attorneys for Idaho Ground Water Appropriators, Inc. (IGWA)

STATE OF IDAHO

DEPARTMENT OF WATER RESOURCES

IN THE MATTER OF THE DISTRIBUTION OF WATER TO VARIOUS WATER RIGHTS HELD BY AND FOR THE BENEFIT OF A&B IRRIGATION DISTRICT, AMERICAN FALLS RESERVOIR DISTRICT #2, BURLEY IRRIGATION DISTRICT, MILNER IRRIGATION DISTRICT, MINIDOKA IRRIGATION DISTRICT, NORTH SIDE CANAL COMPANY, AND TWIN FALLS CANAL COMPANY	Docket No. CM-DC-2010-001 **IGWA's Motion to Take Official Notice of Joint Forecast**

Idaho Ground Water Appropriators, Inc. ("IGWA"), on behalf of its members North Snake Ground Water District, Magic Valley Ground Water District, Carey Valley Ground Water District, Aberdeen-American Falls Area Ground Water District, Jefferson-Clark Ground Water District, Madison Ground Water District, and Henry's Fork Ground Water District, hereby moves the Director of the Idaho Department of Water Resources pursuant to rule 602 of the rules of procedure of the Department (IDAPA 37.01.01.602) to take official notice of relevant portions of the April Water Supply Outlook Report issued by the United States Department of Agriculture for the 2023 water year issued April 7, 2023 ("April 2023 Joint Forecast").

Rule 602 states: "The presiding officer may take official notice of any facts that could be judicially noticed in the courts of Idaho, of generally recognized technical or scientific data or facts within the agency's specialized knowledge and records of the agency." A fact which could be judicially noticed in the courts of Idaho include "a fact that is not subject to reasonable dispute because it: (1) is generally known within the trial court's territorial jurisdiction; or (2) can be accurately and readily determined from sources whose accuracy cannot reasonably be questioned." Idaho Rule of Evidence 201.

The *Fifth Amended Final Order Regarding Methodology for Determining Material Injury to Reasonable In-Season Demand and Reasonable Carryover* ("*Fifth Methodology Order*") issued April 21, 2023, relies upon the annual April Joint Forecast to predict the water supply that will be available to the SWC. Accordingly, the *Final Order Regarding April 2023 Forecast Supply (Steps 1-3)* ("*April 2023 As-Applied Order*") issued April 21, 2023, utilizes the April 2023 Joint Forecast to calculate the Demand Shortfall to the SWC under steps 1-3 of the *Fifth Methodology Order*.

Since the April Joint Forecast is a component of the *Fifth Methodology Order* and is utilized in the *April 2023 As-Applied Order*, IGWA respectfully requests that the Director take official notice of the portion of the April 2023 Joint Forecast attached hereto as ***Appendix A*** which consists of the entire April 2023 Joint Forecast except for the regional forecasts for areas that do not contribute to the SWC water supply (Panhandle Basins, Clearwater River Basin, Salmon River Basin, West Central Basins, Bear River Basin).

Dated this 8th day of June, 2023.

RACINE OLSON, PLLP

By: _____
Thomas J. Budge
Attorneys for IGWA

CERTIFICATE OF SERVICE

I hereby certify that on this 8th day of June, 2023, I served the foregoing document on the persons below via email or as otherwise indicated:

Thomas J. Budge

Director Gary Spackman Garrick Baxter Sarah Tschohl Idaho Department of Water Resources 322 E Front St. Boise, ID 83720-0098	gary.spackman@idwr.idaho.gov garrick.baxter@idwr.idaho.gov sarah.tschohl@idwr.idaho.gov file@idwr.idaho.gov
John K. Simpson Travis L. Thompson MARTEN LAW P. O. Box 63 Twin Falls, ID 83303-0063	tthompson@martenlaw.com jsimpson@martenlaw.com jnielsen@martenlaw.com
W. Kent Fletcher FLETCHER LAW OFFICE P.O. Box 248 Burley, ID 83318	wkf@pmt.org
Kathleen Marion Carr US Dept. Interior 960 Broadway Ste 400 Boise, ID 83706	kathleenmarion.carr@sol.doi.gov
David W. Gehlert Natural Resources Section Environment and Natural Resources Division U.S. Department of Justice 999 18th St., South Terrace, Suite 370 Denver, CO 80202	david.gehlert@usdoj.gov
Matt Howard US Bureau of Reclamation 1150 N Curtis Road Boise, ID 83706-1234	mhoward@usbr.gov

Sarah A Klahn Somach Simmons & Dunn 2033 11th Street, Ste 5 Boulder, Co 80302	sklahn@somachlaw.com dthompson@somachlaw.com
Rich Diehl City of Pocatello P.O. Box 4169 Pocatello, ID 83205	rdiehl@pocatello.us
Candice McHugh Chris Bromley MCHUGH BROMLEY, PLLC 380 South 4th Street, Suite 103 Boise, ID 83 702	cbromley@mchughbromley.com cmchugh@mchughbromley.com
Robert E. Williams WILLIAMS, MESERVY, & LOTHSPEICH, LLP P.O. Box 168 Jerome, ID 83338	rewilliams@wmlattys.com
Robert L. Harris HOLDEN, KIDWELL, HAHN & CRAPO, PLLC P.O. Box 50130 Idaho Falls, ID 83405	rharris@holdenlegal.com
Randall D. Fife City Attorney, City of Idaho Falls P.O. Box 50220 Idaho Falls, ID 83405	rfife@idahofallsidaho.gov
Corey Skinner IDWR-Southern Region 1341 Fillmore St., Ste. 200 Twin Falls, ID 83301-3033	corey.skinner@idwr.idaho.gov
Tony Olenichak IDWR-Eastern Region 900 N. Skyline Drive, Ste. A Idaho Falls, ID 83402	Tony.Olenichak@idwr.idaho.gov
COURTESY COPY TO: William A. Parsons PARSONS SMITH & STONE P.O. Box 910 Burley, ID 83318	wparsons@pmt.org

APPENDIX A

USDA United States Department of Agriculture

Natural Resources Conservation Service

Idaho Water Supply Outlook Report
April 1, 2023

New record SWE set at the Pebble Creek SNOTEL & Snow Course for April 1 (photo by Cameron Williams, 3/28/2023).

Pebble Creek SNOTEL site was installed in 2021 to expand snow monitoring in the Willow-Blackfoot-Portneuf basin. SNOTEL sites are often installed near existing snow courses so that the new data can be used right away in snow runoff forecasting. Measurements have been made at this snow course for 78 years and a new record was set this month with 87" depth and 29.5" SWE. Although we are excited that drought-stricken areas are finally getting relief, these large amounts of snow could lead to flooding in places if melting occurs too quickly this spring.

Water Supply Outlook Report
Federal - State – Private Cooperative Snow Surveys

For more water supply and resource management information:

Contact: Your local county *Natural Resources Conservation Service Office* Internet Web Address: http://www.id.nrcs.usda.gov/snow/
Natural Resources Conservation Service Snow Surveys
9173 West Barnes Drive, Suite C
Boise, ID 83709-1574, (208) 378-5700 ext. 5

To join a free email subscription list, please contact us by email at: idboise-nrcs-snow@usda.gov

How forecasts are made

Most of the annual streamflow in the western United States originates as snowfall that has accumulated in the mountains during the winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when the snow melts. Measurements of snow water equivalent at selected manual snow courses and automated SNOTEL sites, along with precipitation, antecedent streamflow, and indices of the El Niño / Southern Oscillation are used in computerized statistical and simulation models to produce runoff forecasts. Unless otherwise specified, all forecasts are for flows that would occur naturally without any upstream influences.

Forecasts of any kind are not perfect. Streamflow forecast uncertainty arises from three primary sources: (1) uncertain knowledge of future weather conditions, (2) uncertainty in the forecasting procedure, and (3) errors in the data. The forecast, therefore, must be interpreted not as a single value but rather as a range of values with specific probabilities of occurrence. The middle of the range is expressed by the 50% exceedance probability forecast, for which there is a 50% chance that the actual flow will be above, and a 50% chance that the actual flow will be below, this value. To describe the expected range around this 50% value, four other forecasts are provided, two smaller values (90% and 70% exceedance probability) and two larger values (30%, and 10% exceedance probability). For example, there is a 90% chance that the actual flow will be more than the 90% exceedance probability forecast. The others can be interpreted similarly.

The wider the spread among these values, the more uncertainty is in the forecast. As the season progresses, forecasts become more accurate, primarily because a greater portion of the future weather conditions become known; this is reflected by a narrowing of the range around the 50% exceedance probability forecast. Users should take this uncertainty into consideration when making operational decisions by selecting forecasts corresponding to the level of risk they are willing to assume about the amount of water to be expected. If users anticipate receiving a lesser supply of water, or if they wish to increase their chances of having an adequate supply of water for their operations, they may want to base their decisions on the 90% or 70% exceedance probability forecasts, or something in between. On the other hand, if users are concerned about receiving too much water (for example, threat of flooding), they may want to base their decisions on the 30% or 10% exceedance probability forecasts, or something in between. Regardless of the forecast value users choose for operations, they should be prepared to deal with either more or less water. (Users should remember that even if the 90% exceedance probability forecast is used, there is still a 10% chance of receiving less than this amount.) By using the exceedance probability information, users can easily determine the chances of receiving more or less water.

Starting in 2020, streamflow forecasts with poor prediction skill (jackknife $r^2 < 0.34$) will no longer be issued. This will primarily affect the January and June forecasts, with little change anticipated for the February, March, April, and May forecasts. For more information, please contact Danny Tappa (daniel.tappa@usda.gov)

April 2023: Idaho Water Supply Summary

Overview

Mother Nature did not get the memo that winter was supposed to come to an end. March was colder than normal across Idaho with well above normal precipitation south of the Clearwater Basin (Fig. 1). Precipitation amounts were so high last month that water supply conversations shifted from, "will we get out of drought?" to concerns about potential flooding. How quickly the snowpack melts this spring will determine the balance of having enough water or too much water. Cold temperatures across the state have delayed the runoff season; these delays are especially apparent in the Southern Snake basins, which typically begin their runoff season in mid-March. With April forecasted to be cool and wet, increases in streamflow may continue to be delayed.

Large gains in the snowpack during March turned the tables for water supply. Streamflow forecasts are well above normal in southern Idaho, and in the Boise, Wood, Lost, Willow-Blackfoot-Portneuf, and Bear River basins. Water supply looks more than adequate across the state given the robust snowpack. Due to low reservoir storage in the Upper Snake River system, water supply could still be limited for some water users despite the improvements in this month's streamflow forecasts.

Weather and drought outlooks

The first part of April is expected to be warmer and potentially drier than normal before returning to cool, wet conditions. In general, April is expected to be cooler and wetter than normal according to the one month outlook from NOAA's Climate Prediction Center (CPC). Looking farther ahead, cool temperatures are favored this spring south of the Clearwater Basin. Northern Idaho may experience drier than normal conditions this spring; future precipitation conditions remain unknown elsewhere in the state. The CPC stated that La Niña conditions ended in March, and predict El Nino-Southern Oscillation (ENSO) neutral conditions this spring and early summer.

Drought status improved across large swaths of Idaho. Drought category improvements occurred where this year's snowpack is well above normal and reflect that northern Idaho is drier than central and southern Idaho. Currently, 31% of Idaho lands are in moderate drought (D1) with a portion of Lemhi County remaining in severe drought (D2); the rest of the state is abnormally dry (DO). After multiple years of drought conditions, it will take time to fully recover. The seasonal drought outlook predicts drought will persist in the Panhandle but will improve across the rest of the state.

Snowpack

It was a very snowy March with records set at many SNOTEL stations and snow courses! The snowpack is near to well above normal across the entire state (Fig. 3). Basins south of the Clearwater have the highest snowpack (SWE) percentages compared to northern Idaho. Although March wasn't quite as wet in northern Idaho, all basins in that area finally reached normal snowpack conditions (94% to 101%). Snowpack ranges from 113% to 226% in the rest of the state as of April 1 (Fig. 3). Compared to median peak snowpack values in each basin, snowpack ranges from 84% to 168% (Fig. 4). Whatever metric you use, we can agree this has been a banner snow year for southern Idaho that will be talked about for years to come.

Cooler than normal temperatures across the state, especially south of the Snake River Plain, preserved the low and mid-elevation snowpack. Usually in March, the snowpack in the Southern Snake basins has begun melting but this year, it has just kept growing. With warmer temperatures on the horizon, we should begin to see some melting occur at lower elevations. One way to track when the snowpack is ready to melt is to watch snow density increase as temperatures warm. As snow density reaches ~45%, it's a good indication the snowmelt runoff season has begun. These 'Snow to Flow' graphs are helpful to see the past timing of snowmelt compared to that year's snowpack, the Northwest River Forecast Center (NWRFC) provide river and flood forecasts, and the USGS site shows real-time streamflow conditions.

Precipitation

In March, northern Idaho was much drier than the rest of the state. Monthly precipitation was 60 to 102% compared to the rest of the state, where precipitation was 134 to 203% of normal (Fig. 1). This pattern of drier conditions in northern Idaho has persisted from fall and through this winter. Total water year precipitation is 75 to 81% of normal in northern Idaho, near normal in the Salmon, West Central, and Upper Snake basins, and well above normal everywhere else (Fig. 2). The southeast portion of the state continued to be the wettest at ~142% of normal total water year precipitation.

Water supply and streamflow forecasts

Water supply conditions have turned around since last month with the very wet, cold March. All basins, apart from Upper Snake River water users, can expect sufficient water supply this irrigation season. This holds true especially if we have normal to above normal spring precipitation. Due to low reservoir carryover, water supply may still be limited for some water users in the Upper Snake River. However, the water supply picture for this important region has vastly improved over this winter.

April 1 streamflow forecast volumes increased significantly from last month (Fig. 5), reflecting the well above normal March precipitation and massive gains in the snowpack. The unusually large amounts of snow still lingering at the low and mid-elevations strongly influenced the rise in snowmelt runoff forecasts. Although soil conditions remain dry and may reduce snowmelt volume, there's enough water headed our way that dry soils likely won't play as big of a role this year as the previous two. The impacts of having large amounts of snow at these lower elevations in late winter will be determined by how quickly warm spring temperatures arrive and whether the nights are also warm. We would like to see a gradual snowmelt progression to avoid flooding.

For the primary forecast period, well above normal streamflow volumes are predicted in the Southern Snake, Boise, Wood, Lost, Willow-Blackfoot-Portneuf, and Bear River basins. Near normal streamflow is forecasted for the Upper Snake, Henrys Fork-Teton, Payette, Weiser, and Salmon basins. Streamflow is forecasted to be below normal in the Clearwater and Panhandle basins. To look at the range of possible streamflow volume outcomes, consult these forecast graphics for your basin of interest. Streamflow, snowpack, and precipitation data for each basin can be accessed here or on the NRCS interactive map here.

Reservoir storage is still below normal across many parts of the state. This makes sense because inflow into reservoirs has been very low this winter. Streamflow for the October 1 to April 1 time period is well below normal. This reflects the multi-year drought, reduced groundwater and dry soil conditions as well as the colder than normal temperatures throughout this winter. However, once the snowpack begins melting, we will quickly see reservoirs begin to fill. In anticipation of all the runoff, flood risk management operations began on the Boise River system on April 3. Reservoir storage in the Boise system is 64% of capacity and the Payette system is at 61% of capacity.

On April 6, reservoir storage in the Upper Snake River system (above Milner Dam) is ~2.22 million acre-feet and is 55% full. The system is unlikely to fill this year although a rainy spring in combination with the above normal snowpack would help bring reservoir levels closer to normal in the upper system (Jackon Lake and Palisades Reservoirs). The NRCS forecast for Snake River at Heise during the April through September period is 110% of normal (4,020 KAF). The forecast increased by 380,000 acre-feet from last month. Downstream, the NWRFC forecast for Snake River at Milner, is 103% of normal (6,371 KAF). Given current storage and streamflow forecasts, available water supply will likely be good but insufficient for all water users in this region. Continuation of wet conditions this spring would help alleviate water supply limitations for Upper Snake water users.

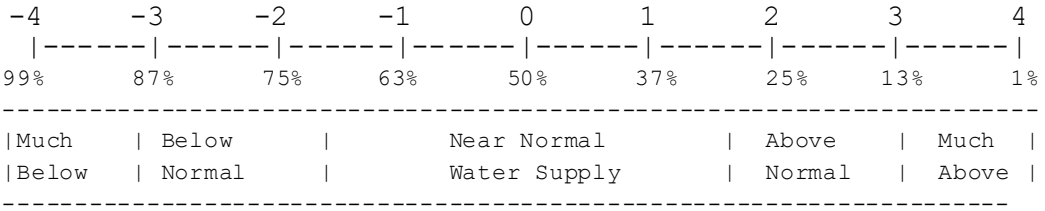
IDAHO SURFACE WATER SUPPLY INDEX (SWSI) April 1, 2023

The Surface Water Supply Index (SWSI) is a predictive indicator of surface water availability within a watershed for the spring and summer water use season. The index is calculated by combining pre-runoff reservoir storage (carryover) with forecasts of spring and summer streamflow. SWSI values are scaled from +4.0 (abundant supply) to -4.0 (extremely dry), with a value of zero indicating a median water supply as compared to historical occurrences. The SWSI analysis period is from 1991 to present.

SWSI values provide a more comprehensive outlook of water availability by combining streamflow forecasts and reservoir storage where appropriate. The SWSI index allows comparison of water availability between basins for drought or flood severity analysis. Threshold SWSI values have been determined for some basins to indicate the potential for agricultural irrigation water shortages.

BASIN or REGION	*SWSI Value*	*Most Recent Year With Similar SWSI Value*	*Agricultural Water Supply Shortage May Occur When SWSI is Less Than*
Spokane	**-0.8**	**2019**	**NA**
Clearwater	**-1.5**	**2016**	**NA**
Salmon	**1.5**	**2012**	**NA**
Weiser	**1.0**	**2012**	**NA**
Payette	**1.0**	**2009**	**NA**
Boise	**2.0**	**2012**	**- 2.4**
Big Wood above Hailey	**2.5**	**1993**	**- 2.7**
Big Wood	**2.8**	**1999**	**0.6**
Camas Creek nr Blaine	**4.0**	**2006**	**NA**
Little Wood	**2.8**	**2019**	**- 1.4**
Big Lost	**2.8**	**2018**	**0.9**
Little Lost	**2.0**	**2018**	**1.6**
Teton	**0.8**	**2014**	**- 3.9**
Henrys Fork	**1.8**	**2008**	**- 2.9**
Snake (Heise)	**-0.7**	**1993**	**- 1.6**
Oakley	**2.0**	**2007**	**-0.1**
Salmon Falls above Jackpot	**4.0**	**2011**	**NA**
Salmon Falls	**2.3**	**1999**	**- 0.6**
Bruneau	**3.3**	**2017**	**NA**
Owyhee	**1.5**	**2005**	**- 2.1**
Bear River	**1.5**	**2021**	**- 3.9**

SWSI SCALE, PERCENT CHANCE OF EXCEEDANCE, AND INTERPRETATION



NA=Not Available / Not Applicable; Note: The Percent Chance of Exceedance is an indicator of how often a range of SWSI values might be expected to occur. Each SWSI unit represents about 12% of the historical occurrences. As an example of interpreting the above scale, the SWSI can be expected to be greater than -3.0, 87% of the time and less than -3.0, 13% of the time. Half the time, the SWSI will be below and half the time above a value of zero. The interval between -1.5 and +1.5 described as "Near Normal Water Supply," represents three SWSI units and would be expected to occur about one-third (36%) of the time.

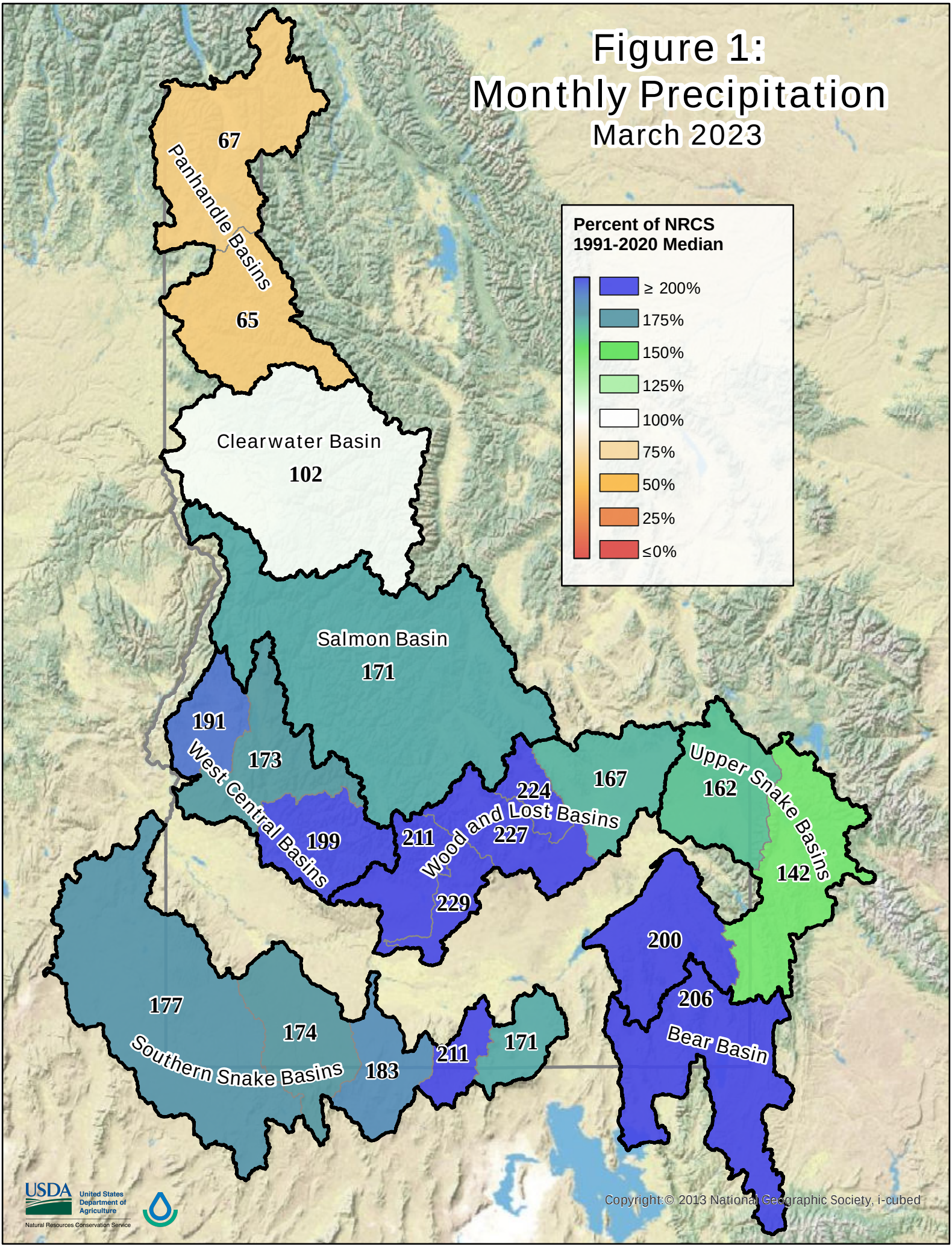


Figure 1:
Monthly Precipitation
March 2023
Percent of NRCS
1991-2020 Median
≥ 200%
175%
150%
125%
100%
75%
50%
25%
≤0%
67
Panhandle Basins
65
Clearwater Basin
102
Salmon Basin
171
191
173
West Central Basins
199
211
224
227
Wood and Lost Basins
229
167
162
Upper Snake Basins
142
200
206
Bear Basin
177
174
Southern Snake Basins
183
211
171
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Agriculture
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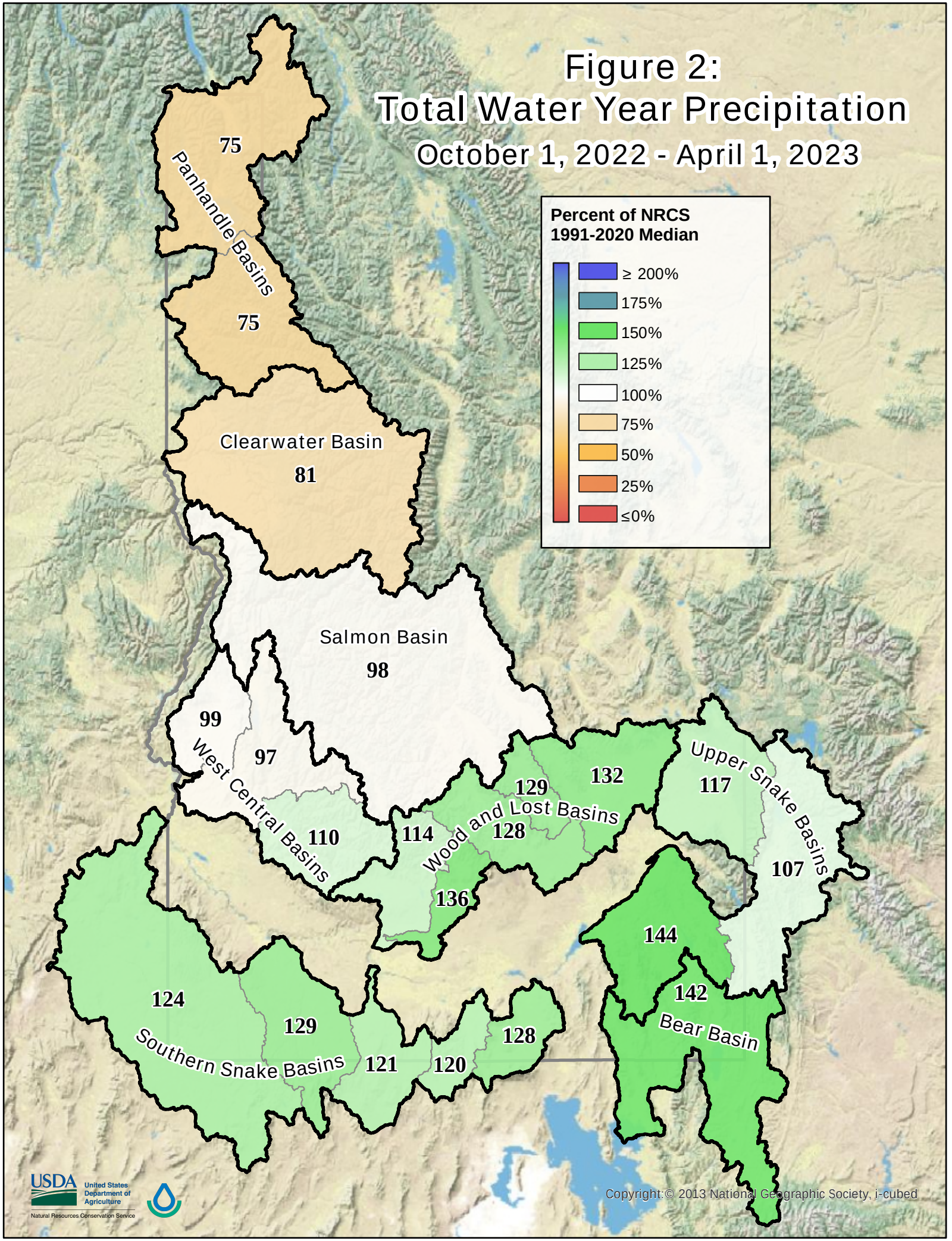
Figure 2:
Total Water Year Precipitation
October 1, 2022 - April 1, 2023



USDA United States Department of Agriculture
Natural Resources Conservation Service

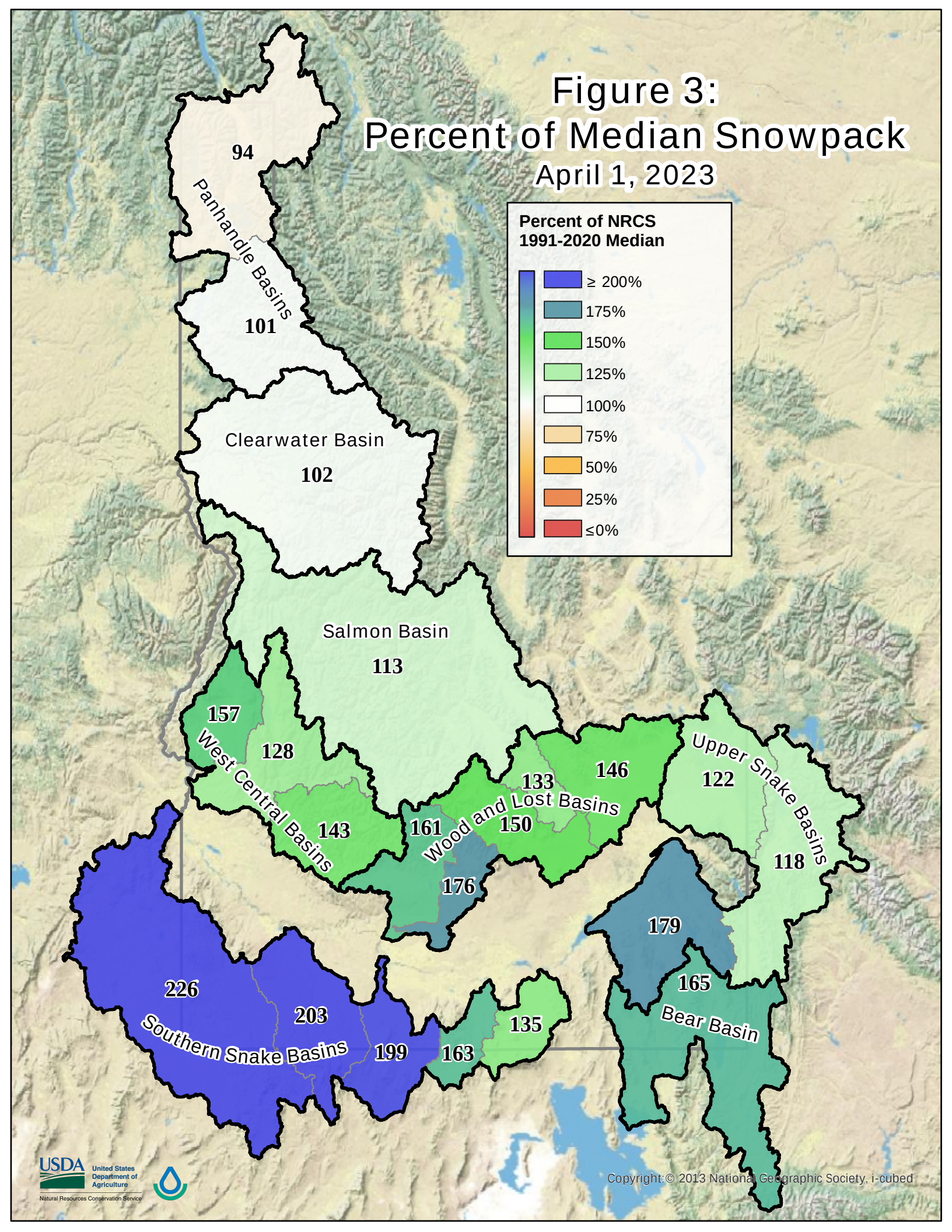


Figure 3:
Percent of Median Snowpack
April 1, 2023
Percent of NRCS
1991-2020 Median
≥ 200%
175%
150%
125%
100%
75%
50%
25%
≤0%
94
Panhandle Basins
101
Clearwater Basin
102
Salmon Basin
113
157
128
West Central Basins
143
161
Wood and Lost Basins
150
133
146
Upper Snake Basins
122
118
176
179
165
Bear Basin
226
203
Southern Snake Basins
199
163
135
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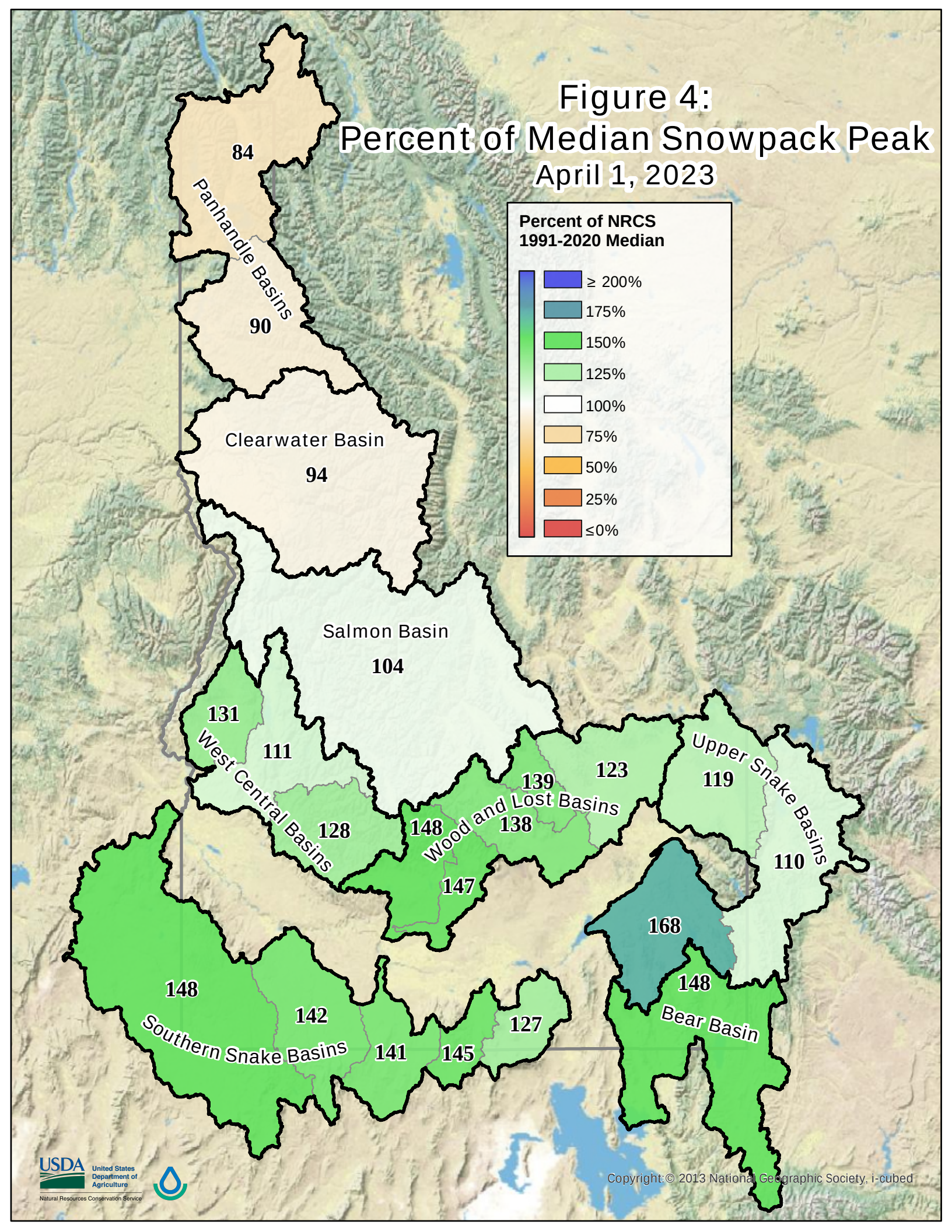
Figure 4:
Percent of Median Snowpack Peak
April 1, 2023
Percent of NRCS
1991-2020 Median
≥ 200%
175%
150%
125%
100%
75%
50%
25%
≤0%
84
Panhandle Basins
90
Clearwater Basin
94
Salmon Basin
104
131
111
West Central Basins
128
139
123
Upper Snake Basins
119
148
Wood and Lost Basins
138
110
147
168
148
142
Southern Snake Basins
141
145
127
148
Bear Basin
USDA
United States
Department of
Agriculture
Natural Resources Conservation Service
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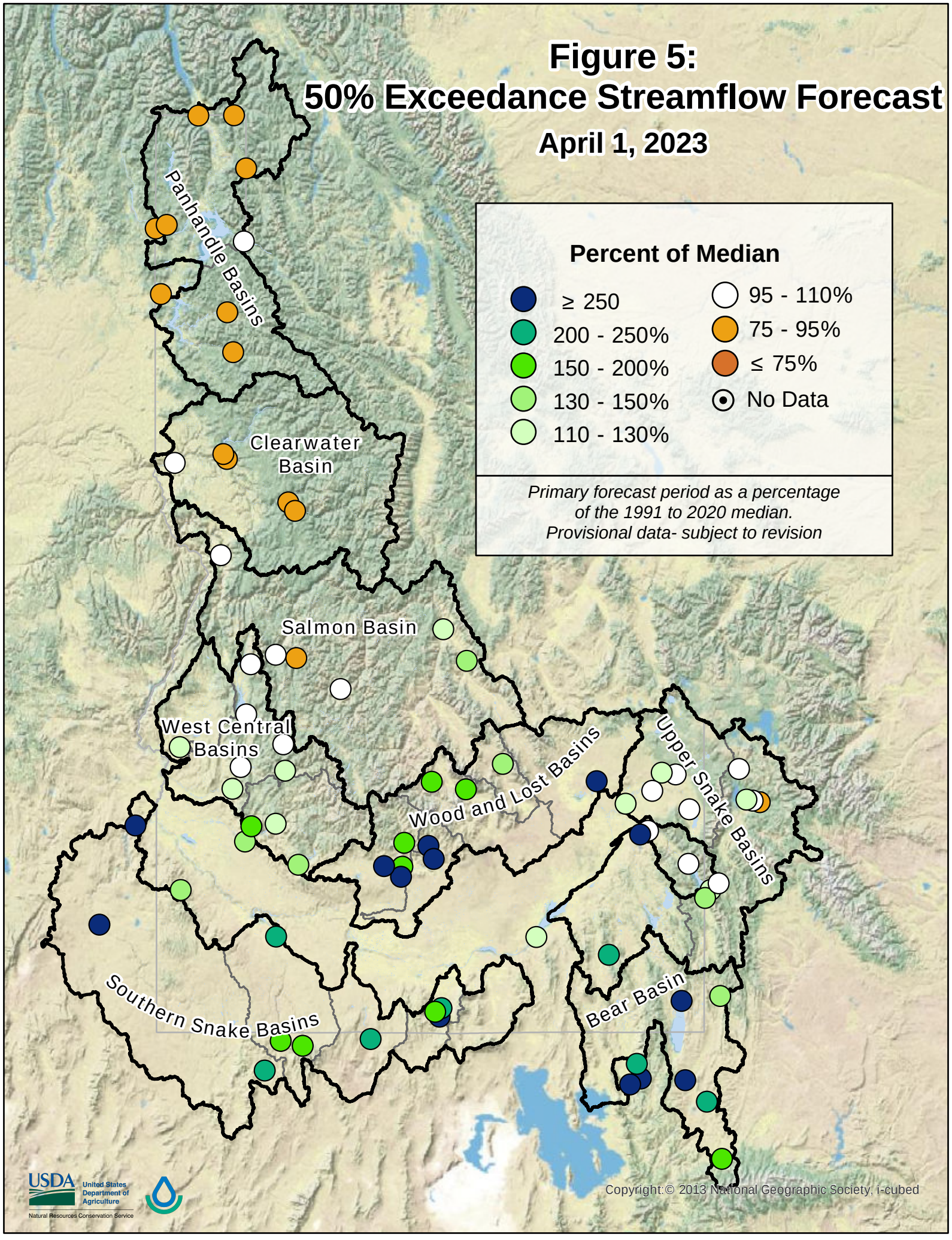
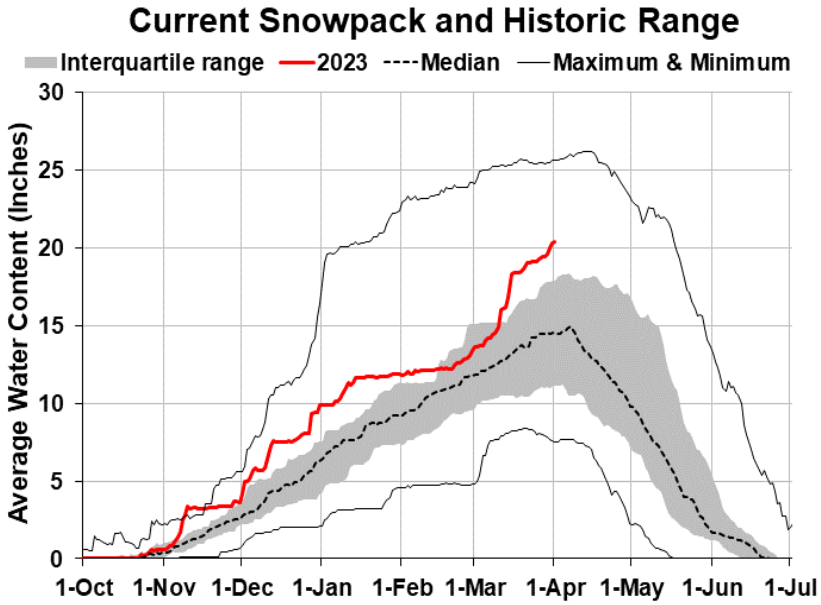
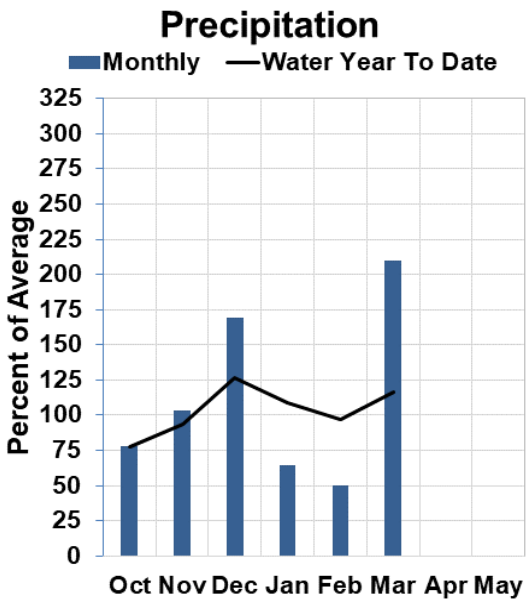
Figure 5:
50% Exceedance Streamflow Forecast
April 1, 2023



Wood & Lost River Basins

April 1, 2023





WATER SUPPLY OUTLOOK

Monthly precipitation totals for March were well above normal across the Wood & Lost River basins. The Big & Little Wood, as well as the Big & Little Lost basins received ~210 to 230% of normal monthly precipitation, while the Birch-Medicine Lodge basins received 167% of normal (Fig. 1). Water year total precipitation is impressive across the area, and now ranges from ~115 to 135% of normal (Fig. 2). Basin snowpack is spectacular, with all basins between ~135 to 175% of normal for April 1 (Fig. 3). Current snowpack levels greatly exceed the normal seasonal peak snowpack (Big Wood, Little Wood, Big Lost, Little Lost, Camas Creek), and are the highest totals observed since 2017. Snowpack density remains low for this time of year, which is a strong indicator widespread melt and runoff will be delayed this spring.

April 1 reservoir storage is below the 30-year normal for Magic Reservoir (37%) and Mackay Reservoir (86%), while releases are being made from Little Wood Reservoir (51% of normal, 38% full) to make room for significant inflow there. Streamflow forecasts for the Wood and Lost basins are now significantly above normal and range from ~145 to 280% of normal. The median forecast for Camas Creek near Blaine is now 220 KAF (489% of normal!), which is more than enough to fill Magic Reservoir by itself. While the above normal snowpack brings much needed drought relief, it simultaneously carries the potential for spring flooding. If needed, NOAA's Northwest River Forecast Center provides a variety of products related to flood forecasting and awareness.

Wood and Lost Basins Streamflow Forecasts - April 1, 2023

Forecast Point	Forecast Period	Forecast Exceedance Probabilities for Risk Assessment <--Drier----------Projected Volume----------Wetter--> 90% (KAF)	70% (KAF)	50% (KAF)	% Median	30% (KAF)	10% (KAF)	30yr Med (KAF)
Camas Ck at Camas	APR-JUL	42	54	64	370%	74	90	17.3
Little Lost R bl Wet Ck nr Howe	APR-JUL	28	32	36	144%	39	44	25
	APR-SEP	33	39	43	148%	47	54	29
Big Lost R at Howell Ranch	APR-JUL	183	210	225	155%	245	270	145
	APR-SEP	205	230	250	157%	270	300	159
Big Lost R bl Mackay Reservoir	APR-JUL	139	163	179	172%	195	220	104
	APR-SEP	165	191	210	165%	225	255	127
Little Wood R ab High Five Ck	APR-JUL	104	120	131	252%	143	161	52
	APR-SEP	111	128	140	250%	152	172	56
Little Wood R nr Carey 2	APR-JUL	114	131	143	265%	156	176	54
	APR-SEP	121	139	152	262%	166	188	58
Big Wood R at Hailey	APR-JUL	255	295	320	152%	345	385	210
	APR-SEP	285	325	355	154%	385	425	230
Big Wood R ab Magic Reservoir	APR-JUL	157	215	255	183%	305	380	139
	APR-SEP	169	225	270	185%	320	400	146
Camas Ck nr Blaine	APR-JUL	165	198	220	489%	245	285	45
	APR-SEP	165	198	220	478%	250	290	46
Big Wood R bl Magic Dam 2	APR-JUL	330	415	480	279%	550	655	172
	APR-SEP	350	435	500	275%	565	675	182

Normals based on 1991-2020 reference period: streamflow, snowpack, precipitation, & reservoir normals are medians.

1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

Reservoir Storage (KAF): End of March

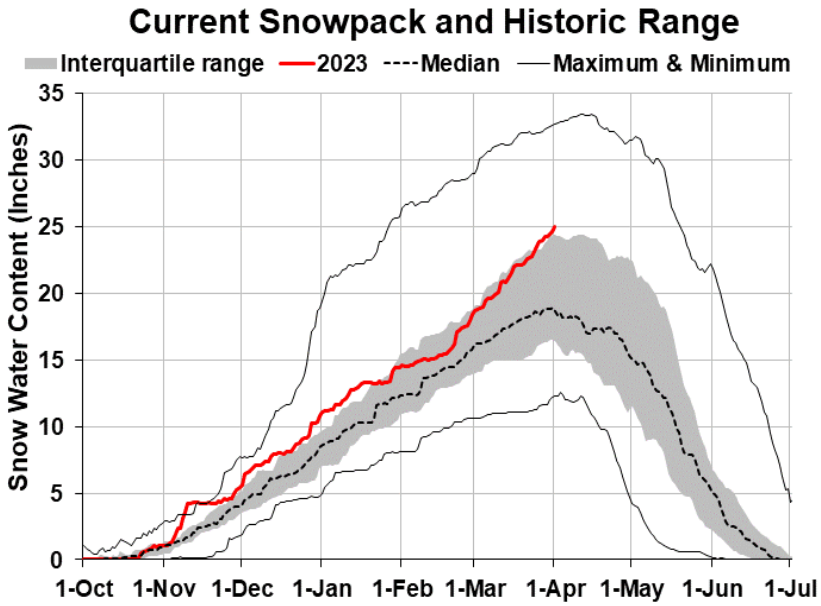
Reservoir Name	Current (KAF)	Last YR	Median (KAF)	Capacity (KAF)
Mackay Reservoir	28.4	24.4	32.8	44.4
Little Wood Reservoir	11.4	19.5	22.1	30.0
Magic Reservoir	30.5	31.4	81.4	191.5

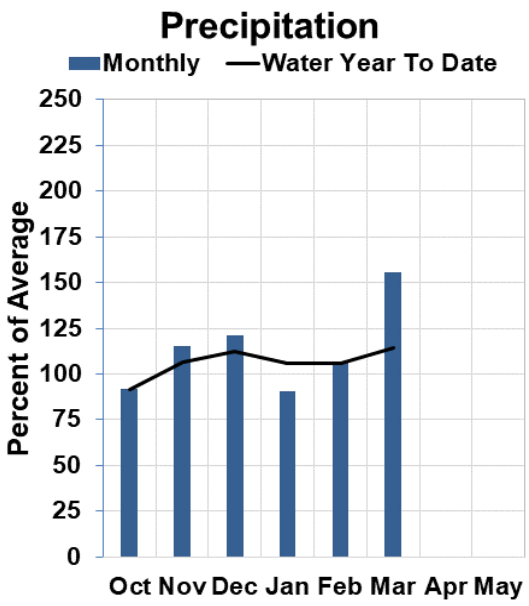
Watershed Snowpack Analysis: April 1, 2023

Basin Name	# of Sites	% of Median 2023	% of Median 2022
Camas-Beaver Creeks	4	154%	44%
Birch-Medicine Lodge Creeks	6	141%	74%
Little Lost River	5	133%	76%
Big Lost River ab Mackay	5	142%	75%
Big Lost Basin Total	7	150%	75%
Fish Creek	3	208%	80%
Little Wood ab Resv	5	162%	68%
Big Wood River ab Hailey	8	147%	71%
Camas Creek	4	202%	35%
Birch-Medicine Lodge-Camas-Beaver Total	10	146%	61%
Little Wood Basin Total	8	176%	72%
Big Wood Basin Total	12	162%	61%

Upper Snake River Basins

April 1, 2023





WATER SUPPLY OUTLOOK

Precipitation fell consistently throughout March as storm after storm hit the region. Monthly precipitation was well above normal for all Upper Snake basins (Fig. 1). Only Buffalo Fork, one of the easternmost sub-basins, received below normal March precipitation. Water year total precipitation in the Upper Snake basins as of April 1 are well above normal; Henrys Fork-Teton is 117%, Snake River above Heise is 107%, and the Willow-Blackfoot-Portneuf is 144% of normal (Fig.2). Snowpack is well above normal in the Upper Snake River with basins ranging from 118 to 179% (Fig.3). NOAA's Official 30-Day Outlook predicts below normal temperatures to continue with no clear precipitation signal.

Storage is 87% of normal for the Upper Snake system. The Jackson Lake and Palisades reservoirs are 57% of normal (36% of capacity), and Henrys Fork-Teton reservoirs are 103% of normal (89% of capacity). With the roughly one million acre-feet deficit that began the winter, we will need well above normal streamflow to return to normal storage. Median streamflow forecasts for the region range from ~93 to 141% for the April to July runoff period. While the above normal snowpack brings much needed drought relief, it simultaneously carries the potential for spring flooding. If needed, NOAA's Northwest River Forecast Center provides a variety of products related to flood forecasting and awareness.

Upper Snake River Basin Streamflow Forecasts - April 1, 2023

Forecast Point	Forecast Period	Forecast Exceedance Probabilities for Risk Assessment <--Drier----------Projected Volume----------Wetter--> 90% (KAF)	70% (KAF)	50% (KAF)	% Median	30% (KAF)	10% (KAF)	30yr Med (KAF)
Henrys Fk nr Ashton 2	APR-JUL	440	490	525	111%	560	610	475
	APR-SEP	585	640	680	108%	720	780	630
Falls R nr Ashton 2	APR-JUL	355	390	415	105%	440	475	395
	APR-SEP	430	475	505	106%	530	575	475
Teton R nr Driggs	APR-JUL	116	141	158	108%	175	199	146
	APR-SEP	151	182	205	115%	225	255	178
Teton R nr St Anthony	APR-JUL	285	340	370	104%	405	455	355
	APR-SEP	355	415	460	108%	500	560	425
Henrys Fk nr Rexburg 2	APR-JUL	1120	1270	1370	113%	1470	1610	1210
	APR-SEP	1420	1610	1730	109%	1860	2040	1580
Snake R at Flagg Ranch	APR-JUL	415	465	505	109%	540	590	465
	APR-SEP	450	510	550	109%	590	645	505
Snake R nr Moran 2	APR-JUL	735	810	865	118%	915	995	730
	APR-SEP	805	890	950	117%	1010	1100	810
Pacific Ck at Moran	APR-JUL	100	129	149	97%	169	197	154
	APR-SEP	107	137	157	98%	178	210	160
Buffalo Fk ab Lava Ck nr Moran	APR-JUL	210	240	265	93%	285	320	285
	APR-SEP	235	270	300	97%	325	360	310
Snake R ab Reservoir nr Alpine 2	APR-JUL	1820	2020	2150	100%	2280	2480	2140
	APR-SEP	2080	2300	2460	101%	2610	2840	2430
Greys R ab Reservoir nr Alpine	APR-JUL	300	335	360	114%	385	420	315
	APR-SEP	350	390	420	115%	445	490	365
Salt R ab Reservoir nr Etna	APR-JUL	345	395	430	141%	465	515	305
	APR-SEP	430	490	530	139%	570	630	380
Snake R nr Irwin 2	APR-JUL	2690	3000	3210	110%	3410	3720	2930
	APR-SEP	3130	3490	3740	109%	3990	4360	3420
Snake R nr Heise 2	APR-JUL	2900	3210	3430	110%	3640	3960	3130
	APR-SEP	3390	3770	4020	110%	4280	4650	3660
Willow Ck nr Ririe 2	APR-JUL	86	109	127	318%	145	174	40
Portneuf R at Topaz	APR-JUL	98	111	120	240%	129	144	50
	APR-SEP	119	133	144	222%	154	171	65
Snake R at Neeley 2	APR-JUL	1610	2260	2760	115%	3320	4230	2390
	APR-SEP	1770	2440	2890	122%	3340	4010	2360

Normals based on 1991-2020 reference period: streamflow, snowpack, precipitation, & reservoir normals are medians.

1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

Reservoir Storage (KAF): End of March

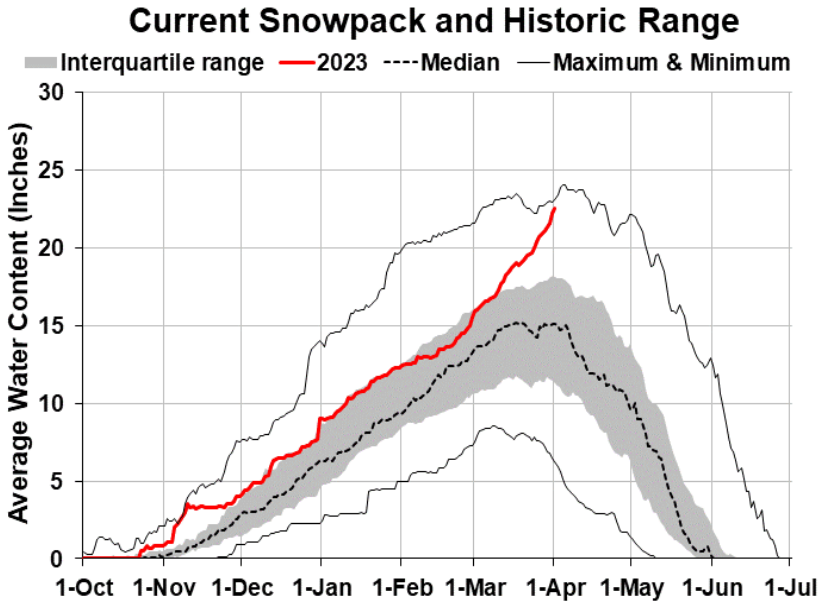
Reservoir Name	Current (KAF)	Last YR	Median (KAF)	Capacity (KAF)
Jackson Lake	199.6	180.4	627.0	847.0
Palisades Reservoir	618.6	627.9	803.3	1400.0
Sub-Basin Total	**818.2**	**808.3**	**1430.3**	**2247.0**
Henrys Lake	83.9	82.5	85.0	90.4
Island Park Reservoir	117.4	122.0	109.3	135.2
Grassy Lake	12.0	10.8	13.2	15.2
Sub-Basin Total	**213.4**	**215.3**	**207.5**	**240.8**
Ririe Reservoir	49.1	49.7	48.7	80.5
Blackfoot Reservoir		203.5	198.6	337.0
American Falls Reservoir	1293.8	1346.3	1498.0	1672.6
Basin-Wide Total	**2374.5**	**2623.0**	**3383.1**	**4577.9**

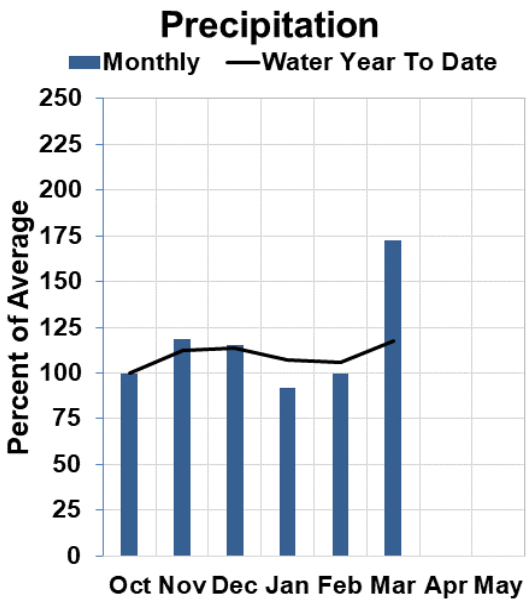
Watershed Snowpack Analysis: April 1, 2023

Basin Name	# of Sites	% of Median 2023	% of Median 2022
Henrys Fork-Falls River	13	122%	66%
Teton River	9	119%	67%
Henrys Fork-Teton	20	122%	67%
Snake River ab Jackson Lake	12	116%	69%
Pacific Creek	3	111%	76%
Buffalo Fork	5	100%	75%
Gros Ventre River	5	101%	79%
Hoback River	5	116%	68%
Greys River	5	114%	71%
Salt River	6	136%	71%
Snake ab Palisades Resv	34	115%	70%
Willow Creek	5	114%	71%
Blackfoot River	6	170%	79%
Portneuf River	7	193%	54%
Willow-Blackfoot-Portneuf	17	179%	66%

Southern Snake River Basins

April 1, 2023





WATER SUPPLY OUTLOOK

March continued this winter's trend of above normal precipitation across the Southern Snake River basins. Monthly precipitation ranged between ~171 to 211%. Water year total precipitation continued to increase and is ~120 to 129% of normal across these basins. The snowpack is currently well above normal and ranges between ~135 to 226% of normal! Most SNOTEL sites in these basins surpassed the peak annual snowpack with little to no melting taking place yet. The deviation from normal is especially noticeable in the lower elevation areas that typically do not hold onto much snow this late into the season. The current snowpack is below normal density across the region. Less dense snow typically requires more energy input to produce snowmelt runoff, which suggests temperatures need to increase substantially before major runoff begins. However, with spring on our doorstep and the large amount of low-level snow we could see high runoff volumes soon. Comparable water years for each basin are: Owyhee 1982, Bruneau 1983, Salmon Falls 1983, Goose Creek 1983, and Raft 2011 & 2017.

Reservoir storage is below normal across the area, and current storage as a percent of normal is Oakley 71%, Wild Horse 91%, Lake Owyhee 50%, and Salmon Falls 53%. The current volumetric streamflow forecasts are well above normal for the 50% exceedance probability in each basin, they are: Owyhee 280%, Bruneau 195%, Salmon Falls 245%, and Goose Creek 237%. Water supply now looks sufficient in all of these basins.

Southside Snake River Basins Streamflow Forecasts - April 1, 2023

Forecast Point	Forecast Period	Forecast Exceedance Probabilities for Risk Assessment <--Drier----------Projected Volume----------Wetter--> 90% (KAF)	70% (KAF)	50% (KAF)	% Median	30% (KAF)	10% (KAF)	30yr Med (KAF)
Goose Ck ab Trapper Ck nr Oakley	APR-JUL	25	31	36	269%	41	49	13.4
	APR-SEP	26	33	38	271%	43	51	14
Trapper Ck nr Oakley	APR-JUL	5.7	6.4	6.9	168%	7.4	8.2	4.1
	APR-SEP	6.8	7.5	8.1	159%	8.7	9.5	5.1
Oakley Reservoir Inflow	APR-JUL	28	35	40	229%	45	53	17.5
	APR-SEP	31	37	43	225%	48	56	19.1
Salmon Falls Ck nr San Jacinto	APR-JUL	100	121	137	245%	153	178	56
	APR-SEP	104	125	140	241%	157	182	58
Bruneau R nr Hot Spring	APR-JUL	235	285	320	204%	360	420	157
	APR-SEP	245	295	335	206%	375	435	163
Reynolds Ck at Tollgate	APR-JUL	6.3	8	9.3	145%	10.7	12.8	6.4
	APR-SEP	6.4	8.1	9.4	147%	10.8	13	6.4
Owyhee R nr Gold Ck 2	APR-JUL	22	31	37	215%	44	56	17.2
Owyhee R nr Rome	APR-JUL	385	510	605	295%	705	870	205
	APR-SEP	405	530	625	284%	730	895	220
Owyhee R bl Owyhee Dam 2	APR-JUL	425	545	640	272%	735	895	235
	APR-SEP	455	580	670	253%	770	925	265

Normals based on 1991-2020 reference period: streamflow, snowpack, precipitation, & reservoir normals are medians.

1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

Reservoir Storage (KAF): End of March

Reservoir Name	Current (KAF)	Last YR	Median (KAF)	Capacity (KAF)
Oakley Reservoir		19.4	26.6	75.6
Salmon Falls Reservoir	23.6	24.4	44.7	182.6
Wild Horse Reservoir	30.4	38.3	33.3	71.5
Lake Owyhee	229.5	286.4	460.0	715.0
Brownlee Reservoir	883.1	1079.0	1123.0	1420.0

Watershed Snowpack Analysis: April 1, 2023

Basin Name	# of Sites	% of Median 2023	% of Median 2022
Raft River	2	135%	84%
Goose-Trapper Creeks	3	163%	77%
Salmon Falls Creek	7	199%	77%
Bruneau River	9	203%	62%
Reynolds Creek	7	132%	57%
Upper Owyhee	13	244%	41%
Owyhee Basin Total	20	226%	50%

Streamflow Adjustment List for All Forecasts Published in Idaho Water Supply Outlook Report: Streamflow forecasts are projections of runoff volumes that would occur without influences from upstream reservoirs or diversions. These values are referred to as natural, unregulated or adjusted flows. To make these adjustments, changes in reservoir storage, diversions, and inter-basin transfers are added or subtracted from the observed (actual) streamflow volumes. The following list documents the adjustments made for each forecast point. **(Revised Dec. 2018).**

Panhandle Region

Kootenai R at Leonia, MT (2)
+ Lake Koocanusa storage change

Moyie R at Eastport – no corrections

Boundary Ck nr Porthill – no corrections

Clark Fork R bl Cabinet Gorge (2)
+ Hungry Horse storage change
+ Flathead Lake storage change
+ Noxon Res storage change
Whitehorse Rapid gage used create longer term record

Pend Oreille Lake Inflow (2)
+ Pend Oreille R at Newport, WA
+ Hungry Horse Res storage change
+ Flathead Lake storage change
+ Noxon Res storage change
+ Lake Pend Oreille storage change
+ Priest Lake storage change

Priest R nr Priest R (2)
+ Priest Lake storage change

NF Coeur d' Alene R at Enaville - no corrections

St. Joe R at Calder- no corrections

Spokane R nr Post Falls (2)
+ Lake Coeur d' Alene storage change

Spokane R at Long Lake, WA (2)
+ Lake Coeur d' Alene storage change
+ Long Lake, WA storage change

Clearwater River Basin

Selway R nr Lowell - no corrections

Lochsa R nr Lowell - no corrections

Dworshak Res Inflow (2)
+ Clearwater R nr Peck
- Clearwater R at Orofino
+ Dworshak Res storage change

Clearwater R at Orofino - no corrections

Clearwater R at Spalding (2)
+ Dworshak Res storage change

Salmon River Basin

Salmon R at Salmon - no corrections

Lemhi R nr Lemhi – no corrections

MF Salmon R at MF Lodge – no corrections
SF Salmon gage used to create longer term record

SF Salmon R nr Krassel Ranger Station – no corrections

Johnson Creek at Yellow pine – no corrections

Salmon R at White Bird - no corrections

West Central Basins

Boise R nr Twin Springs - no corrections

SF Boise R at Anderson Ranch Dam (2)
+ Anderson Ranch Res storage change

Mores Ck nr Arrowrock Dam – no corrections

Boise R nr Boise (2)
+ Anderson Ranch Res storage change
+ Arrowrock Res storage change
+ Lucky Peak Res storage change

SF Payette R at Lowman - no corrections

Deadwood Res Inflow (2)
+ Deadwood R bl Deadwood Res nr Lowman
+ Deadwood Res storage change

Lake Fork Payette R nr McCall – no corrections

NF Payette R at Cascade (2)
+ Payette Lake storage change
+ Cascade Res storage change

NF Payette R nr Banks (2)
+ Payette Lake storage change
+ Cascade Res storage change

Payette R nr Horseshoe Bend (2)
+ Deadwood Res storage change
+ Payette Lake storage change
+ Cascade Res storage change

Weiser R nr Weiser - no corrections

Wood and Lost Basins

Little Lost R bl Wet Ck nr Howe - no corrections

Big Lost R at Howell Ranch - no corrections

Big Lost R bl Mackay Res nr Mackay (2)
+ Mackay Res storage change

Little Wood R ab High Five Ck – no corrections

Little Wood R nr Carey (2)
+ Little Wood Res storage change

Big Wood R at Hailey - no corrections

Big Wood R ab Magic Res (2)
+ Big Wood R nr Bellevue (1912-1996)
+ Big Wood R at Stanton Crossing nr Bellevue (1997 to present)
+ Willow Ck (1997 to present)

Camas Ck nr Blaine – no corrections

Magic Res Inflow (2)
+ Big Wood R bl Magic Dam
+ Magic Res storage change

Upper Snake River Basin

Falls R nr Ashton (2)
+ Grassy Lake storage change
+ Diversions from Falls R ab nr Ashton

Henrys Fork nr Ashton (2)
+ Henrys Lake storage change
+ Island Park Res storage change

Teton R nr Driggs - no corrections

Teton R nr St. Anthony (2)
- Cross Cut Canal into Teton R
+ Sum of Diversions for Teton R ab St. Anthony
+ Teton Dam for water year 1976 only

Henrys Fork nr Rexburg (2)
+ Henrys Lake storage change
+ Island Park Res storage change
+ Grassy Lake storage change
+ 3 Diversions from Falls R ab Ashton-Chester
+ 6 Diversions from Falls R abv Ashton
+ 7 Diversions from Henrys Fk btw Ashton to St. Anthony
+ 21 Diversions from Henrys Fk btw St. Anthony to Rexburg
Snake R nr Flagg Ranch, WY – no corrections
Snake R nr Moran, WY (2)
+ Jackson Lake storage change
Pacific Ck at Moran, WY - no corrections
Buffalo Fork ab Lava nr Moran, WY - no corrections
Snake R ab Res nr Alpine, WY (2)
+ Jackson Lake storage change
Greys R nr Alpine, WY - no corrections
Salt R nr Etna, WY - no corrections
Palisades Res Inflow (2)
+ Snake R nr Irwin
+ Jackson Lake storage change
+ Palisades Res storage change
Snake R nr Heise (2)
+ Jackson Lake storage change
+ Palisades Res storage change
Ririe Res Inflow (2)
+ Willow Ck nr Ririe
+ Ririe Res storage change
The forecasted natural volume for Willow Creek nr Ririe does not include Grays Lake water diverted from Willow Creek drainage through the Clarks Cut diversion and into Blackfoot Reservoir.
Blackfoot R ab Res nr Henry (2)
+ Blackfoot Res storage change
The forecasted Blackfoot Reservoir Inflow includes Grays Lake water diverted from the Willow Creek drainage through the Clarks Cut diversion and into Blackfoot Reservoir.
Portneuf R at Topaz - no corrections
American Falls Res Inflow (2)
+ Snake R at Neeley
+ Jackson Lake storage change
+ Palisades Res storage change
+ American Falls storage change
+ Teton Dam for water year 1976 only

Southside Snake River Basins

Goose Ck nr Oakley - no adjustments
Trapper Ck nr Oakley - no adjustments
Oakley Res Inflow - *flow does not include Birch Creek*
+ Goose Ck
+ Trapper Ck
Salmon Falls Ck nr San Jacinto, NV - no corrections
Bruneau R nr Hot Springs - no corrections
Reynolds Ck at Tollgate - no corrections
Owyhee R nr Gold Ck, NV (2)
+ Wildhorse Res storage change
Owyhee R nr Rome, OR – no Corrections
Owyhee Res Inflow (2)
+ Owyhee R bl Owyhee Dam, OR
+ Lake Owyhee storage change
+ Diversions to North and South Canals

Bear River Basin

Bear R nr UT-WY Stateline, UT- no corrections
Bear R abv Res nr Woodruff, UT- no corrections
Big Ck nr Randolph, UT - no corrections
Smiths Fork nr Border, WY - no corrections
Bear R bl Stewart Dam (2)
+ Bear R bl Stewart Dam
+ Rainbow Inlet Canal
Little Bear R at Paradise, UT - no corrections
Logan R nr Logan, UT - no corrections
Blacksmith Fk nr Hyrum, UT - no corrections

Reservoir Capacity Definitions (Units in 1,000 Acre-Feet, KAF)

Different agencies use various definitions when reporting reservoir capacity and contents. Reservoir storage terms include dead, inactive, active, and surcharge storage. This table lists the volumes for each reservoir, and defines the storage volumes NRCS uses when reporting capacity and current reservoir storage. In most cases, NRCS reports usable storage which includes active and/or inactive storage. **(Revised Feb. 2015)**

Basin- Lake or Reservoir	Dead Storage	Inactive Storage	Active Storage	Surcharge Storage	NRCS Capacity	NRCS Capacity Includes
Panhandle Region						
Hungry Horse	39.73	---	**3451.00**	---	**3451.0**	Active
Flathead Lake	Unknown	---	**1791.00**	---	**1791.0**	Active
Noxon	Unknown	---	**335.00**	---	**335.0**	Active
Lake Pend Oreille	**406.20**	**112.40**	**1042.70**	**---**	**1561.3**	Dead + Inactive + Active
Lake Coeur d'Alene	Unknown	13.50	**225.00**	**---**	**238.5**	Inactive + Active
Priest Lake	**20.00**	**28.00**	**71.30**	**---**	**119.3**	Dead + Inactive + Active
Clearwater Basin						
Dworshak	Unknown	**1452.00**	**2016.00**	**---**	**3468.0**	Inactive + Active
West Central Basins						
Anderson Ranch	24.90	**37.00**	**413.10**	---	450.1	Inactive + Active
Arrowrock	Unknown	---	**272.20**	**---**	**272.2**	Active
Lucky Peak	Unknown	**28.80**	**264.40**	13.80	**293.2**	Inactive + Active
Lake Lowell	7.90	**5.80**	**159.40**	---	165.2	Inactive + Active
Deadwood	Unknown	---	**161.90**	**---**	**161.9**	Active
Cascade	Unknown	**46.70**	**646.50**	**---**	**693.2**	Inactive + Active
Mann Creek	1.61	0.24	**11.10**	**---**	**11.1**	Active
Wood and Lost Basins						
Mackay	0.13	---	**44.37**	**---**	**44.4**	Active
Little Wood	Unknown	---	**30.00**	**---**	**30.0**	Active
Magic	Unknown	---	**191.50**	**---**	**191.5**	Active
Upper Snake Basin						
Jackson Lake	Unknown	---	**847.00**	**---**	**847.0**	Active
Palisades	44.10	**155.50**	**1200.00**	**---**	**1400.0**	Dead +Inactive +Active
Henrys Lake	Unknown	---	**90.40**	**---**	**90.4**	Active
Island Park	0.40	---	**127.30**	**7.90**	**135.2**	Active + Surcharge
Grassy Lake	Unknown	---	**15.18**	**---**	**15.2**	Active
Ririe	4.00	6.00	**80.54**	10.00	**80.5**	Active
Blackfoot	0.00	---	**333.50**	3.50	**333.50**	Active (rev. 2/1/2015)
American Falls	Unknown	---	**1672.60**	**---**	**1672.6**	Active
Southside Snake Basins						
Oakley	0.00	---	**75.60**	**---**	**75.6**	Active
Salmon Falls	48.00	**5.00**	**182.65**	**---**	**182.6**	Active
Wild Horse	Unknown	---	**71.50**	**---**	**71.5**	Active
Lake Owyhee	406.83	---	**715.00**	**---**	**715.0**	Active
Brownlee	0.45	**444.70**	**975.30**	**---**	**1420.0**	Inactive + Active
Bear River Basin						
Bear Lake	5000.00	119.00	**1302.00**	**---**	**1302.0**	Active:
Capacity does not include 119 KAF that can be used, historic values below this level are rounded to zero						
Montpelier	**0.21**	**---**	**3.84**	**---**	**4.0**	Dead + Active

Interpreting Water Supply Forecasts

Each month, five forecasts are issued for each forecast point and each forecast period. Unless otherwise specified, all streamflow forecasts are for streamflow volumes that would occur naturally without any upstream influences. Water users need to know what the different forecasts represent if they are to use the information correctly when making operational decisions. The following is an explanation of each of the forecasts.

90 Percent Chance of Exceedance Forecast. There is a 90 percent chance that the actual streamflow volume will exceed this forecast value, and there is a 10 percent chance that the actual streamflow volume will be less than this forecast value.

70 Percent Chance of Exceedance Forecast. There is a 70 percent chance that the actual streamflow volume will exceed this forecast value, and there is a 30 percent chance that the actual streamflow volume will be less than this forecast value.

50 Percent Chance of Exceedance Forecast. There is a 50 percent chance that the actual streamflow volume will exceed this forecast value, and there is a 50 percent chance that the actual streamflow volume will be less than this forecast value. Generally, this forecast is the middle of the range of possible streamflow volumes that can be produced given current conditions.

30 Percent Chance of Exceedance Forecast. There is a 30 percent chance that the actual streamflow volume will exceed this forecast value, and there is a 70 percent chance that the actual streamflow volume will be less than this forecast value.

10 Percent Chance of Exceedance Forecast. There is a 10 percent chance that the actual streamflow volume will exceed this forecast value, and there is a 90 percent chance that the actual streamflow volume will be less than this forecast value.

*Note: There is still a 20 percent chance that actual streamflow volumes will fall either below the 90 percent exceedance forecast or above the 10 percent exceedance forecast.

These forecasts represent the uncertainty inherent in making streamflow predictions. This uncertainty may include sources such as: unknown future weather conditions, uncertainties associated with the various prediction methodologies, and the spatial coverage of the data network in a given basin.

30-Year Median. The 30-year median streamflow for each forecast period is provided for comparison. The median is based on data from 1991-2020. The % MED column compares the 50% chance of exceedance forecast to the 30-year median streamflow; values above 100% denote when the 50% chance of exceedance forecast would be greater than the 30-year median streamflow.

AF - Acre-feet, forecasted volume of water are typically in thousands of acre-feet (KAF).

These forecasts are given to users to help make risk-based decisions. Users can select the forecast corresponding to the level of risk they are willing to accept in order to minimize the negative impacts of having more or less water than planned for.

To Decrease the Chance of Having Less Water than Planned for
A user might determine that making decisions based on a 50 percent chance of exceedance forecast is too much risk to take (there is still a 50% chance that the user will receive less than this amount). To reduce the risk of having less water than planned for, users can base their operational decisions on one of the forecasts with a greater chance of being exceeded such as the 90 or 70 percent exceedance forecasts.

To Decrease the Chance of Having More Water than Planned for
A user might determine that making decisions based on a 50 percent chance of exceedance forecast is too much risk to take (there is still a 50% chance that the user will receive more than this amount). To reduce the risk of having more water than planned for, users can base their operational decisions on one of the forecasts with a lesser chance of being exceeded such as the 30 or 10 percent exceedance forecasts.

<u>Forecast use example:</u>

Using the 50 Percent Exceedance Forecast. Using the example forecasts shown on the next page, there is a 50% chance that actual streamflow volume at the Henry's Fork near Ashton will be less than 280 KAF between June 1 and Sept. 30. There is also a 50% chance that actual streamflow volume will be greater than 280 KAF.

Using the 90 and 70 Percent Exceedance Forecasts. If an unexpected shortage of water could cause problems (such as irrigated agriculture), users might want to plan on receiving 245 KAF during Jun 1 through September 30 (from the 70 percent exceedance forecast). There is a 30% chance of receiving *less* than 245 KAF.

Alternatively, if users determine the risk of using the 70 percent exceedance forecast is too great, then they might plan on receiving 198 KAF (from the **90** percent exceedance forecast). There is 10% chance of receiving less than 72 KAF.

Using the 30 or 10 Percent Exceedance Forecasts. If an unexpected excess of water could cause problems (such as operating a flood control reservoir), users might plan on receiving 315 KAF between June 1 and Sept. 30 (from the 30 percent exceedance forecast). There is a 30% chance of receiving *more* than 315 KAF.

Alternatively, if users determine the risk of using the 30 percent exceedance forecast is too great, then they might plan on receiving 360 KAF (from the 10 percent exceedance forecast). There is a 10% chance of receiving more than 360 KAF. Users could also choose a volume in between any of these values to reflect their desired risk level.

Upper Snake River Basin Streamflow Forecasts - June 1, 2015

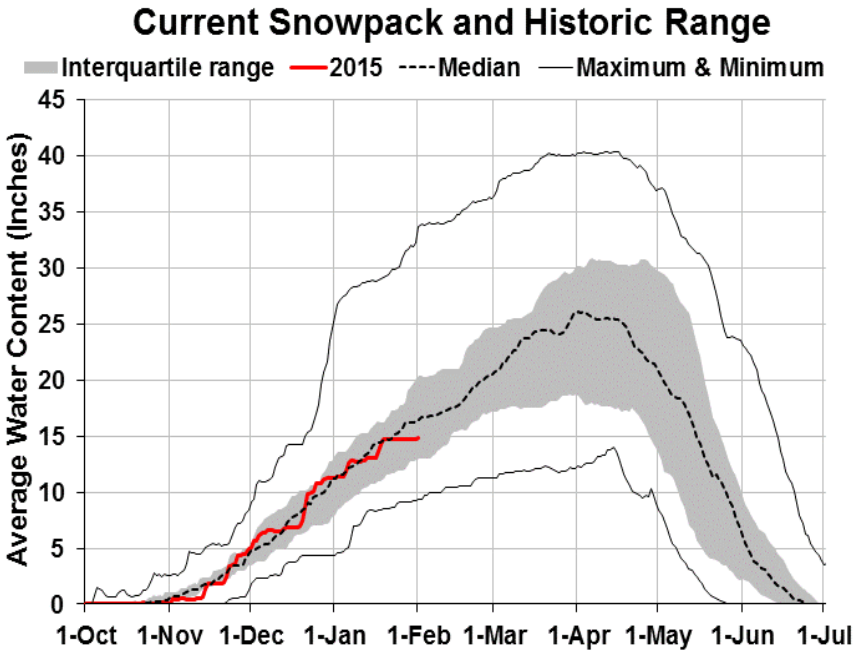
Forecast Point	Forecast Period	Forecast Exceedance Probabilities for Risk Assessment <---Drier----------Projected Volume----------Wetter---> 90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Henrys Fk nr Ashton	JUN-JUL	72	106	129	56	152	186	230
	JUN-SEP	198	245	280	68	315	360	410

Interpreting Snowpack Plots

Basin snowpack plots represent snow water equivalent indices using the average daily SNOTEL data[1] from several sites in or near individual basins. The solid red line (2015), which represents the current water year snowpack water content, can be compared to the normal dashed black line (Median) which is considered "normal", as well as the SNOTEL observed historical snowpack range for each basin. This allows users to gather important information about the current year's snowpack as well as the historical variability of snowpack in each basin.

The gray shaded area represents the interquartile range (also known as the "middle fifty"), which is the 25th to 75th percentiles of the historical daily snowpack data for each basin. Percentiles depict the value of the average snowpack below which the given percent of historical years fall. For example, the top part of the interquartile range (75th percentile) indicates that the snowpack index has been below this line for 75 percent of the period of record, whereas the reverse is true for the lower part of the interquartile range (25th percentile). This means 50 percent of the time the snowpack index is within the interquartile range (gray area) during the period of record.

[1] All data used for these plots come from daily SNOTEL data only and does not include snow course data (collected monthly), whereas the official basin snowpack percent of normal includes both SNOTEL and snow course data, potentially leading to slight discrepancies between plots and official basin percent of normal.



USDA Natural Resources Conservation Service
9173 West Barnes Drive, Suite C
Boise ID 83709-1574

OFFICIAL BUSINESS

Issued by
Terry Cosby, Chief
Natural Resources Conservation Service
Washington, DC

Released by
Curtis Elke, State Conservationist
Natural Resources Conservation Service
Boise, Idaho

Report Created by
Idaho Snow Survey Staff
Natural Resources Conservation Service
Boise, Idaho
Email: idboise-nrcs-snow@usda.gov

Danny Tappa, Data Collection Officer (DCO)
Earl Adsley, Hydrologist
Pete Youngblood, Hydrologist, Coeur d'Alene, ID
Cody Brown, Hydrologist, Coeur d'Alene, ID
Justin Byington, Hydrologist
John Wilford, Electronics Technician

Erin Whorton, Water Supply Specialist (WSS)
Email: erin.whorton@usda.gov
(o) 208-685-6983 (c) 208-510-7294

Forecasts Provided by
Forecast Hydrologist Staff
NRCS, National Water and Climate Center
Portland, Oregon

Julie Koeberle, Forecast Hydrologist
Email: julie.koeberle@usda.gov

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This publication is dedicated to the people, agencies and organizations utilizing this data, information and forecasts for short and long term water management, planning, preparation, recreation and otherwise, for the enhancement of the economy and enrichment of livelihoods.