UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

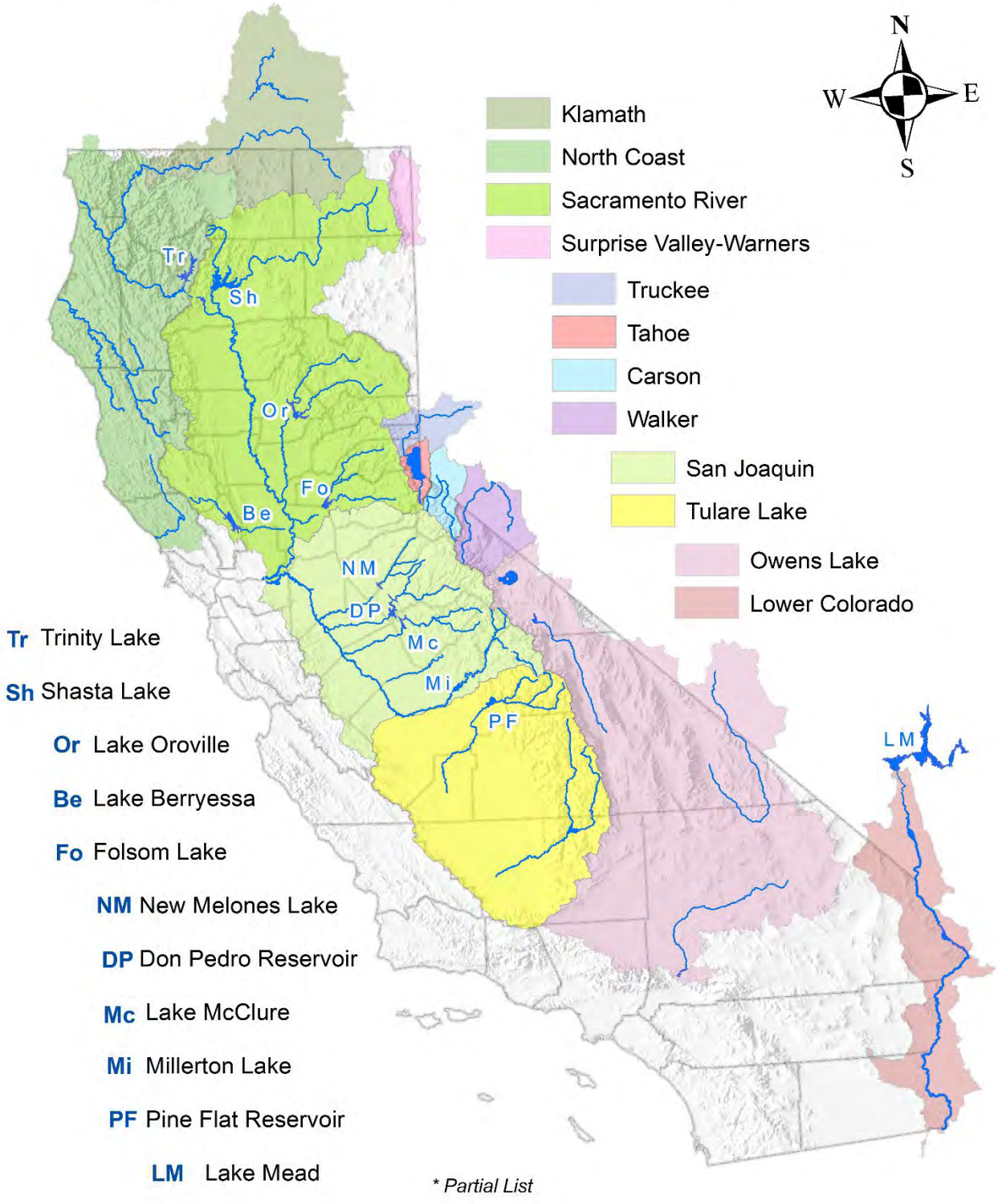
California Water Supply Outlook Report
February 2024

Photo Credit: Evan Smith

Sampling at the Palisade Snow Course (Valerie Bullard, NRCS CA & Jeff Anderson, NRCS UT)
For more information on the snow sampling program, visit: https://www.nrcs.usda.gov/programs-initiatives/sswsf-snow-survey-and-water-supply-forecasting-program/national-water-and

Contents

California Forecast Basins, Major Rivers, and Large Reservoirs*



Tr Trinity Lake

Sh Shasta Lake

Or Lake Oroville

Be Lake Berryessa

Fo Folsom Lake

NM New Melones Lake

DP Don Pedro Reservoir

Mc Lake McClure

Mi Millerton Lake

PF Pine Flat Reservoir

LM Lake Mead

** Partial List*

STATE OF CALIFORNIA GENERAL OUTLOOK
February 2024

NEW Water Supply Outlook Report Format Updates

Historically, NRCS CA has displayed data from 2 other agencies: California Department of Water Resources (DWR) and the National Weather Service (NWS) for the western Sierra streamflow predictions. Together with NRCS's forecasting data, the major irrigation watersheds are covered for the whole state. NRCS CA is transitioning to providing links to the most up to date data as opposed to providing a snapshot of the data collected and provided by these Partner agencies. NRCS CA is interested in your feedback on the new format. If you have any comments, please email them to: NRCS.CA.Engineering@usda.gov.

NEW NRCS Water Supply Forecast System for the American West

This year, the NRCS begins using a new water supply forecast (WSF) system, the Multi-Model Machine-Learning Metasystem, or M4. In comparison to the historic singular WSF model, the new system creates a mean value from six different forecast models. Using the mean of the ensemble of models harnesses the strengths of each technique while insulating against potential individual model vulnerabilities. The original NRCS WSF model remains as part of the suite of ensemble models. Testing shows that the ensemble mean generally equals or exceeds the performance of any individual model member. Application of NRCS water supply probabilistic forecasts remains unchanged.

Contact:
Angus Goodbody, angus.goodbody@usda.gov, Lead Forecast Hydrologist**,** USDA NRCS Snow Survey and Water Supply Forecasting Program

Additional reading:

- Assessing the new NRCS water supply forecast model for the American West
- A Machine Learning Metasystem for Robust Probabilistic Nonlinear Regression-Based Forecasting

Snowpack

As of Feb 8th, snowpack is 82 percent of normal for the dates in the northern Sierras (up from 37% early last month); 75 percent of normal in the central Sierras (up from 33% early last month); and 69 percent in the southern Sierras (up from 25% early last month). The DWR information sheet is enclosed at the end of the General Outlook. More information is available online at: http://cdec.water.ca.gov/snow/current/snow/index2.html.

Precipitation

As of Feb 13th, the Northern Sierra-, San Joaquin-, and Tulare Basin Index stations received 83-, 70-, and 73 percent of average for this date. A wet late January and early February have helped bring seasonal averages closer to the normal range. More information is available online at: http://cdec.water.ca.gov/snow_rain.html

Reservoirs

Total reservoir storage of 125 percent of average (excluding Lake Powell and Lake Mead) has not been updated since October 31, 2023. As of Feb 7, 2024, Storage at Shasta Reservoir was 125 percent of average, up from 115 percent of average early last

month. Oroville Reservoir was 130 percent of average, up slightly from 128 percent of average early last month. Don Pedro Reservoir was 115 percent of average, down slightly from 116 percent of average early last month. The DWR information sheet is enclosed at the end of the General Outlook. More information is available online at: https://cdec.water.ca.gov/reservoir.html.

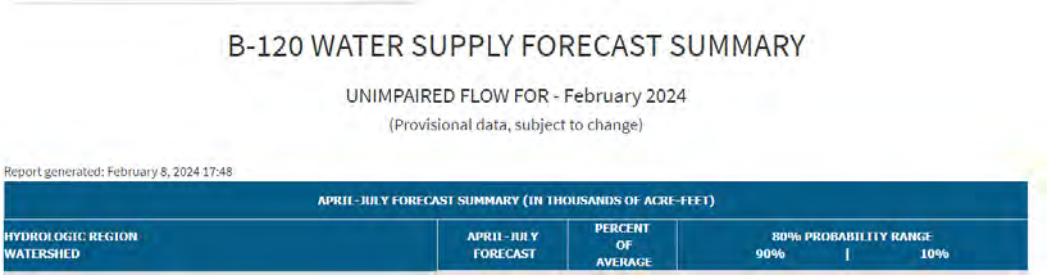
Streamflow

Forecasts in the Sacramento, San Joaquin, and Tulare basins from DWR range between 53- and 97 percent of average between April and July. NRCS forecasts in the Tahoe, Truckee, Carson, and Walker River basins are approximately 64 – 123 percent of the 1991-2020 median. NRCS forecasts for stations in the Klamath Basin are 58 - 148 percent of the 1991-2020 medians between March and September and National Weather Service forecasts on the North Coast are slightly above seasonal averages.

Please note that DWR and NWS use percent of average while NRCS uses percent of median to display forecasted stream flows. Future reports will detail the differences between these metrics. Summaries are provided below.

Links to Data for Sacramento, San Joaquin and Tulare Lake Basins data:

- DWR:
  - B120 (ca.gov) This version of DWR's Bulletin 120 links to the seasonal (April – July) forecasting summary for 18 points in the three watersheds and also provides DWR staff contact information.



B-120 WATER SUPPLY FORECAST SUMMARY

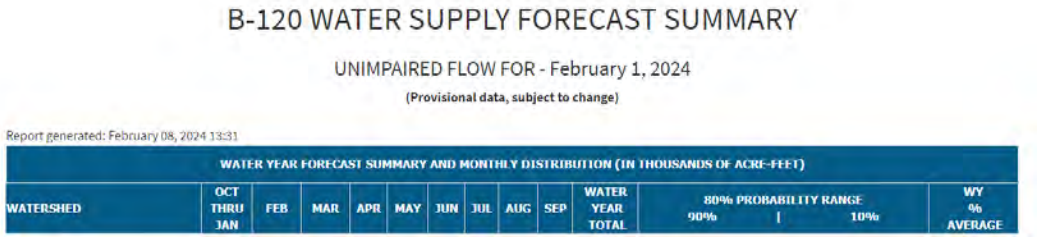
UNIMPAIRED FLOW FOR - February 2024

(Provisional data, subject to change)

Report generated: February 8, 2024 17:48

APRIL-JULY FORECAST SUMMARY (IN THOUSANDS OF ACRE-FEET)				
HYDROLOGIC REGION WATERSHED	APRIL-JULY FORECAST	PERCENT OF AVERAGE	80% PROBABILITY RANGE 90% | 10%	

  - B120DIST (ca.gov) This version of DWR's Bulletin 120 links to the monthly stream forecasts (Feb – Sept) for 16 points in CA and also provides DWR staff contact information.



B-120 WATER SUPPLY FORECAST SUMMARY

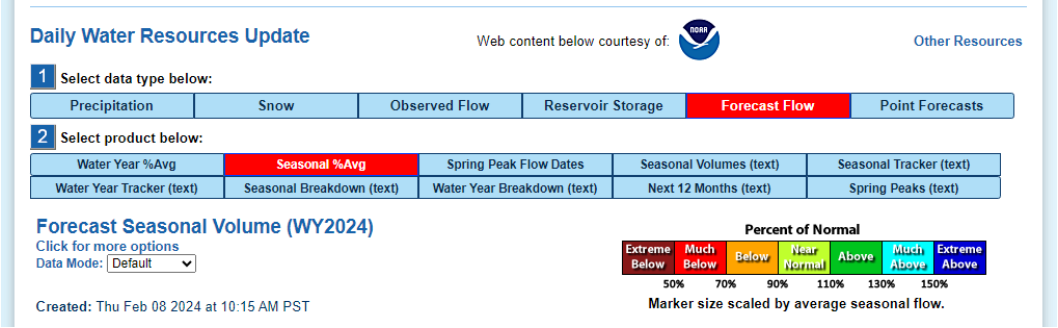
UNIMPAIRED FLOW FOR - February 1, 2024

(Provisional data, subject to change)

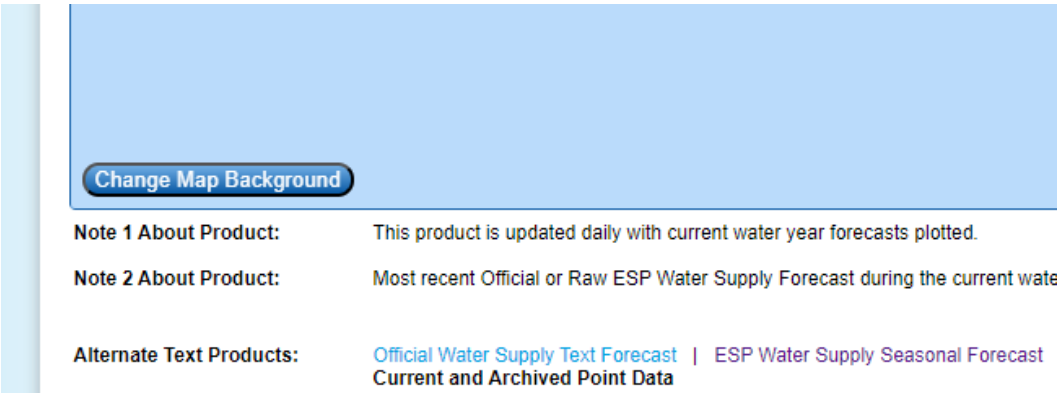
Report generated: February 08, 2024 13:31

WATER YEAR FORECAST SUMMARY AND MONTHLY DISTRIBUTION (IN THOUSANDS OF ACRE-FEET)												
WATERSHED	OCT THRU JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	WATER YEAR TOTAL	80% PROBABILITY RANGE 90% | 10%	WY % AVERAGE

- NWS: [CNRFC - Water Resources - Daily Water Resources Update (noaa.gov)] The California Nevada Forecast Center provides Daily Water updates. The report that is closest to the NRCS forecasting report is the “Seasonal %Avg” product in the “Forecast Flow” data type.



Seasonal Forecast Volumes (as percentages) can be provided by clicking the “show data table” button on the top right of the interactive map. This value is for the whole water year and is not broken down by month. In order to get monthly forecasting data, text reports are available. The “ESP Water Supply Seasonal Forecast” product is the one NRCS used to report data in its previous products.



CURRENT REGIONAL SNOWPACK FROM AUTOMATED SNOW SENSORS

% of April 1 Average / % of Normal for This Date

NORTH	
Data as of February 8, 2024	
Number of Stations Reporting	25
Average snow water equivalent (Inches)	15.8
Percent of April 1 Average (%)	55
Percent of normal for this date (%)	82

CENTRAL	
Data as of February 8, 2024	
Number of Stations Reporting	50
Average snow water equivalent (Inches)	13.6
Percent of April 1 Average (%)	51
Percent of normal for this date (%)	75

SOUTH	
Data as of February 8, 2024	
Number of Stations Reporting	24
Average snow water equivalent (Inches)	11.2
Percent of April 1 Average (%)	47
Percent of normal for this date (%)	69

STATE	
Data as of February 8, 2024	
Number of Stations Reporting	99
Average snow water equivalent (Inches)	13.6
Percent of April 1 Average (%)	51
Percent of normal for this date (%)	75

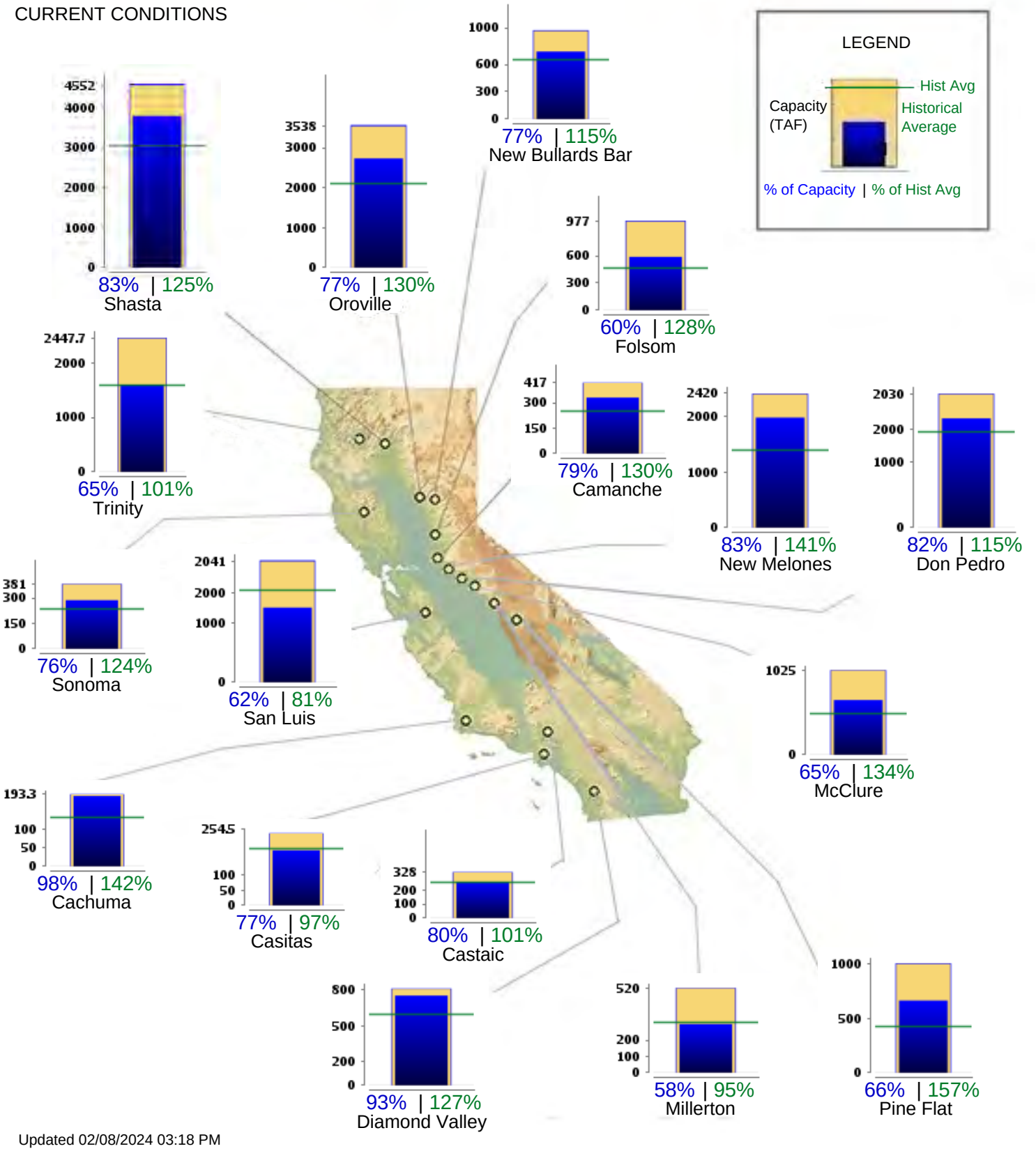
Statewide Average: 51% / 75%

Data as of February 8, 2024

CALIFORNIA MAJOR WATER SUPPLY RESERVOIRS

Midnight - February 7, 2024

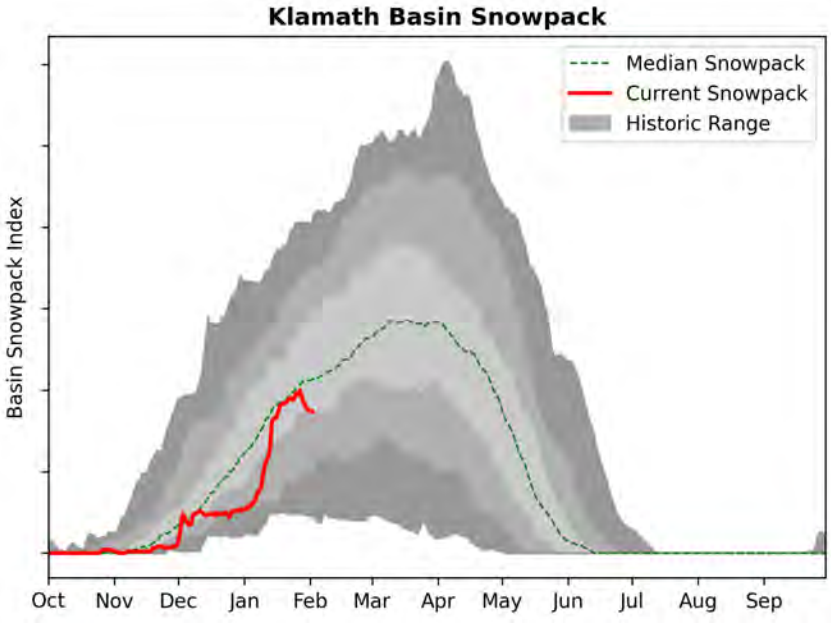
CURRENT CONDITIONS



Updated 02/08/2024 03:18 PM

Klamath Basin Summary

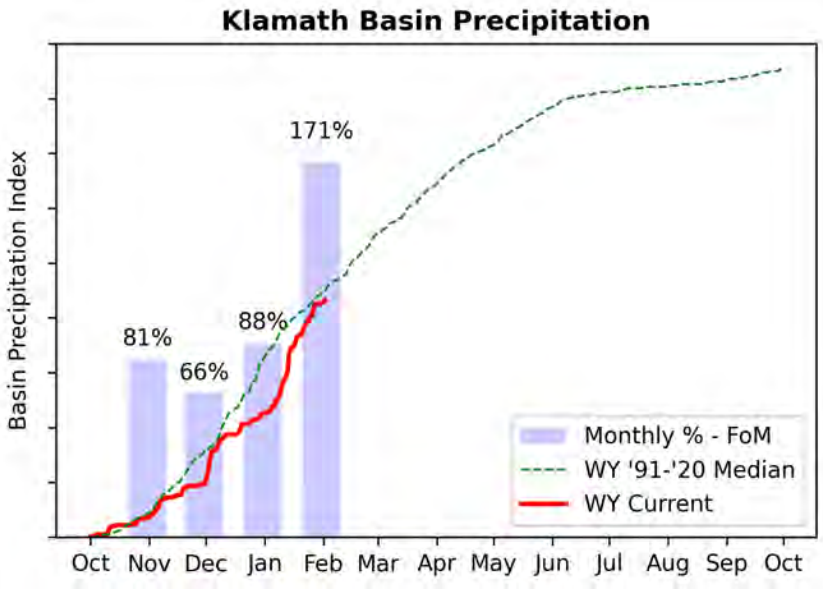
SNOWPACK



► *View snowpack for individual sites by accessing the basin data report* **here**.

As of February 1, the basin snowpack is 78% of median. On January 1, the basin snowpack was 39% of median.

PRECIPITATION



► *View precipitation for individual sites by accessing the basin data report* **here**.

FoM = First of Month

February precipitation is above normal at 171% of median. Precipitation since the beginning of the water year (October 1 - February 1) is 97% of median.

RESERVOIR STORAGE

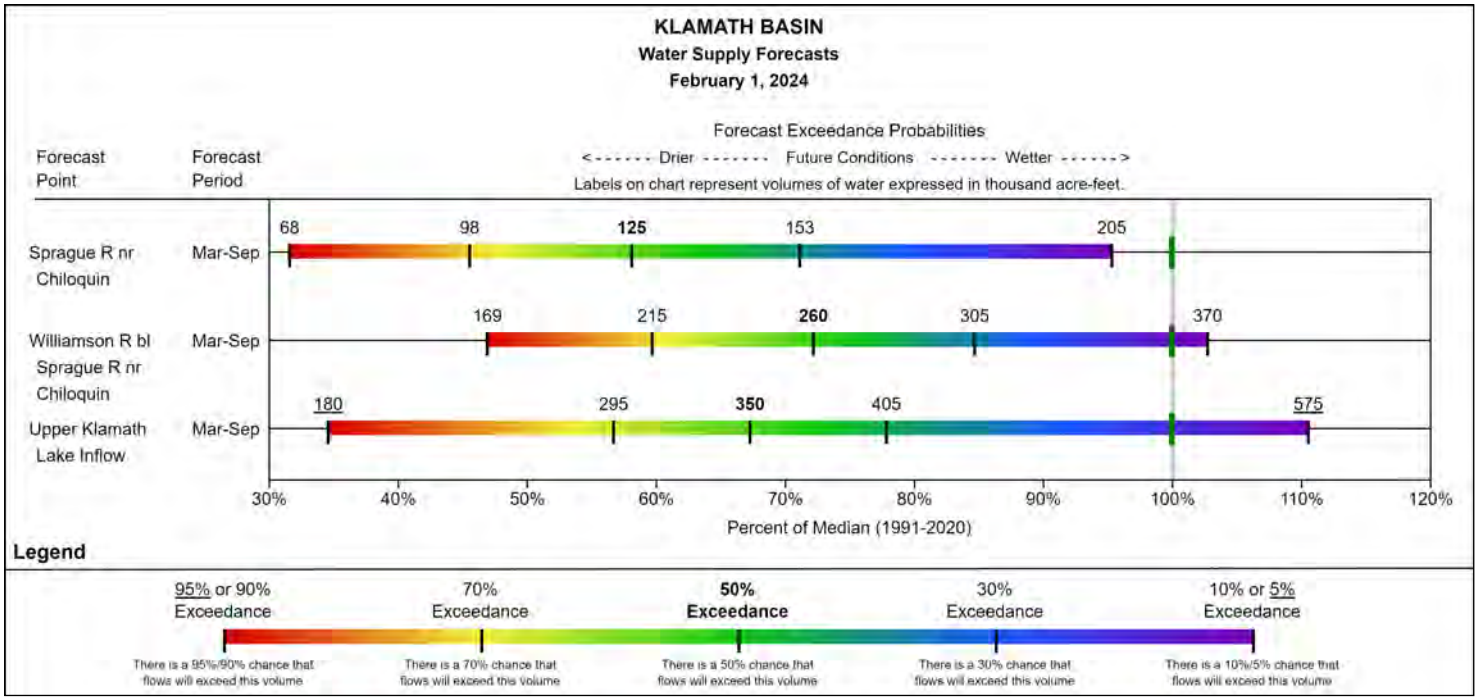
As of February 1, storage at major reservoirs in the basin ranges from 56% of median at Gerber Reservoir to 104% of median at Upper Klamath Lake.

Klamath	Current (KAF)	Last Year (KAF)	Median (KAF)	Capacity (KAF)	Current % Capacity	Last Year % Capacity	Median % Capacity	Current % Median	Last Year % Median
Fourmile Lake	3.8	3.5	5.8	15.6	24%	23%	37%	66%	61%
Gerber	21.8	9.2	38.6	94.3	23%	10%	41%	56%	24%
Hyatt Prairie	8.0	2.2	10.5	16.2	49%	13%	65%	76%	21%
Clear Lake	82.7	53.6	123.7	513.3	16%	10%	24%	67%	43%
Upper Klamath Lake	342.3	328.3	330.6	523.7	65%	63%	63%	104%	99%
Howard Prairie	22.5	9.9	34.5	62.1	36%	16%	56%	65%	29%
Basin Index					**39%**	**33%**	**44%**	**88%**	**75%**
# of reservoirs					6	6	6	6	6

STREAMFLOW FORECAST

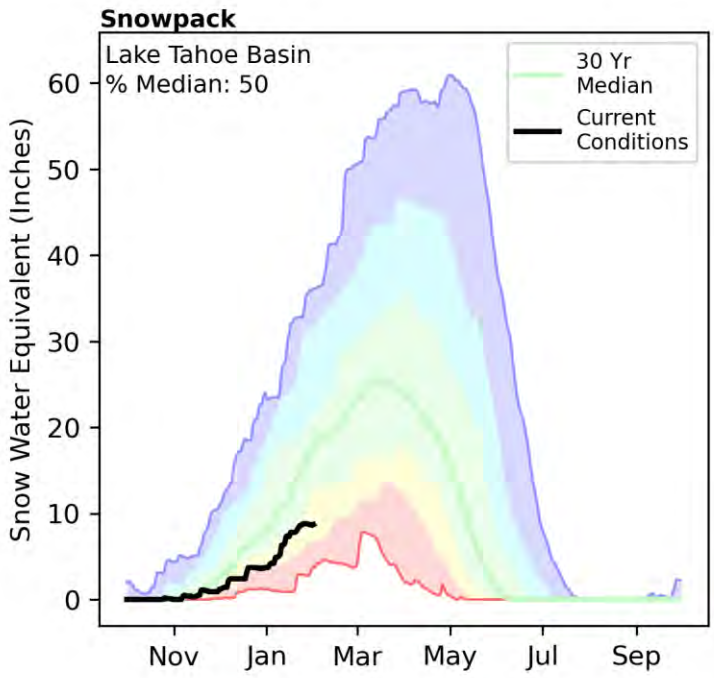
The streamflow forecasts in the basin range from 58% to 148% of median.

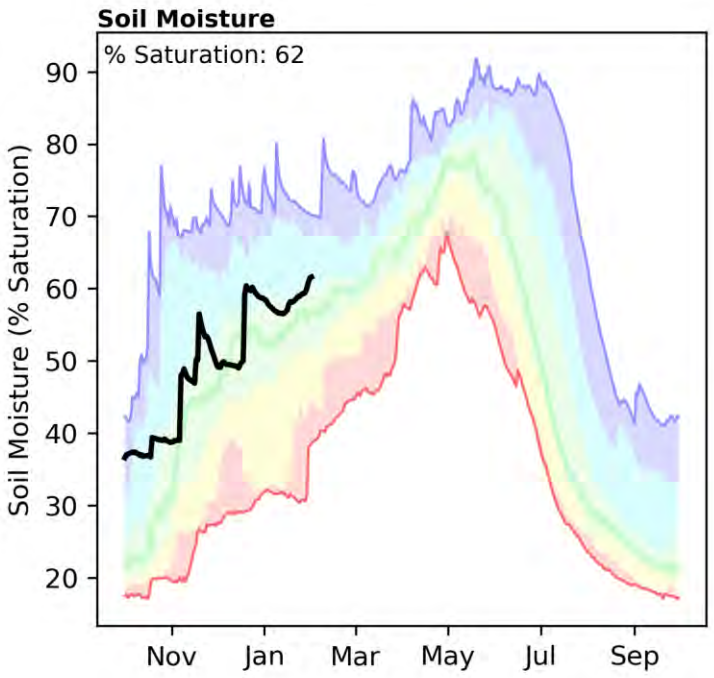
For data in tabular format, in addition to non-primary period data, please view the basin data reports **here**.

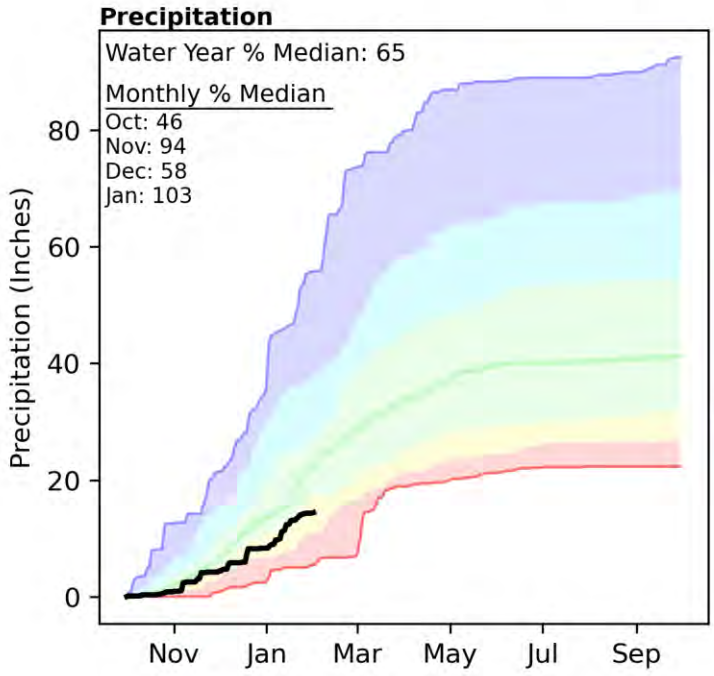


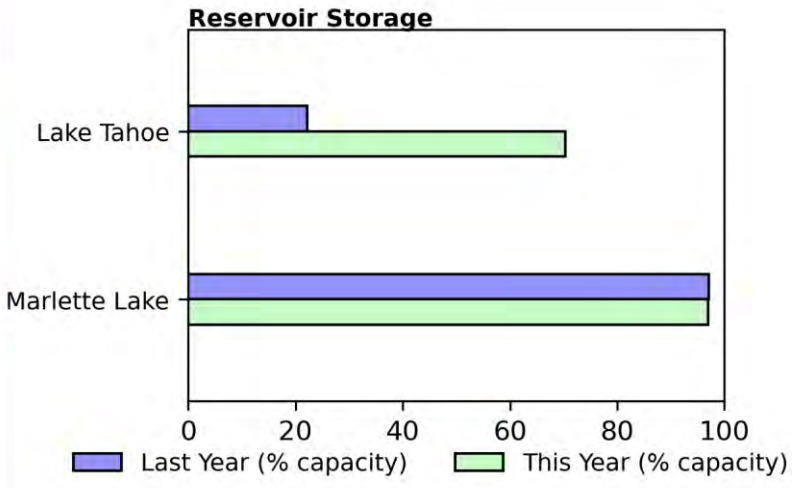
Lake Tahoe Basin | February 1, 2024

Snowpack in the Lake Tahoe Basin is well below normal at 50% of median, compared to 192% at this time last year. Precipitation in January was about normal at 103%, which brings the seasonal accumulation (October-January) to 65% of median. Soil moisture is at 62% saturation compared to 63% saturation last year. Reservoir storage is 71% of capacity, compared to 23% last year.



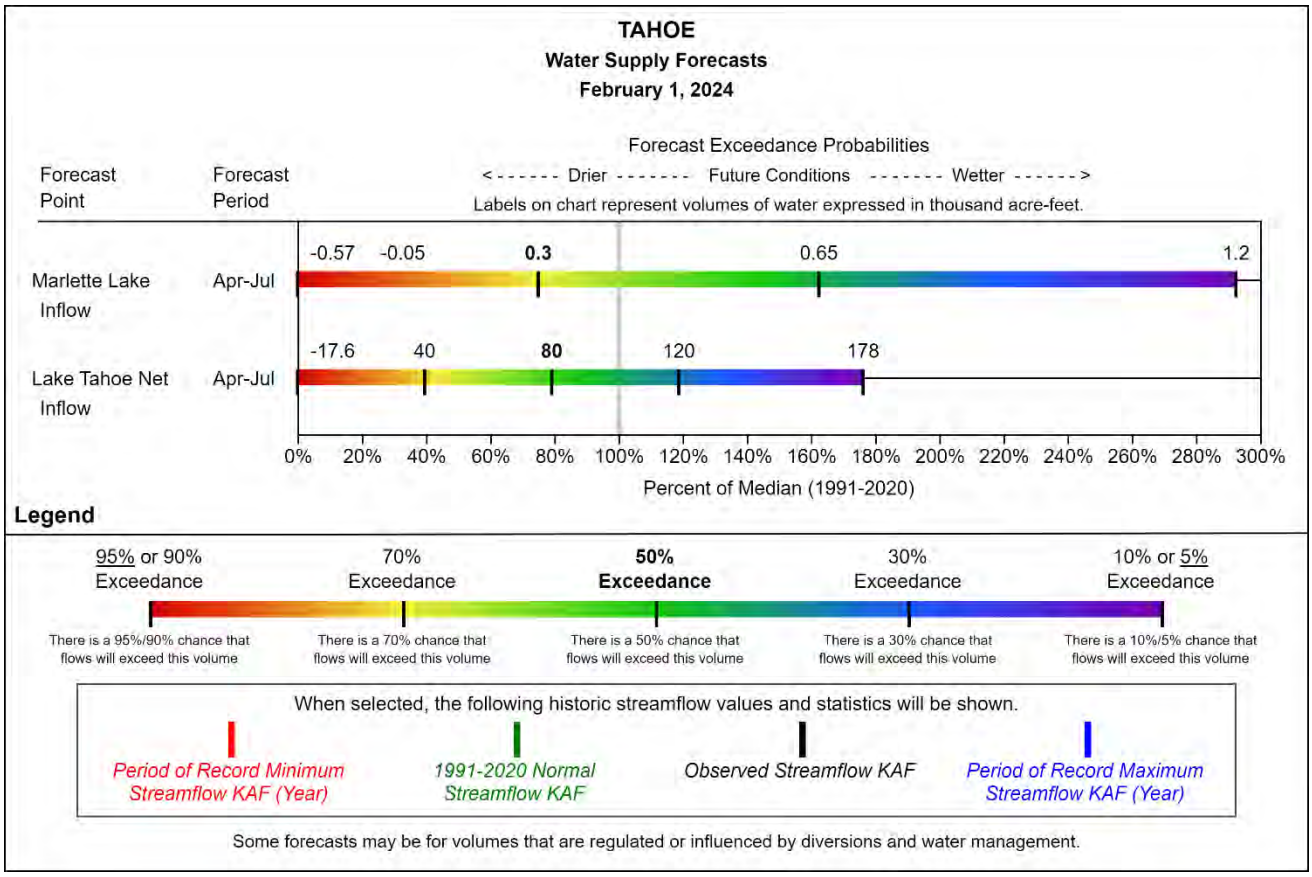


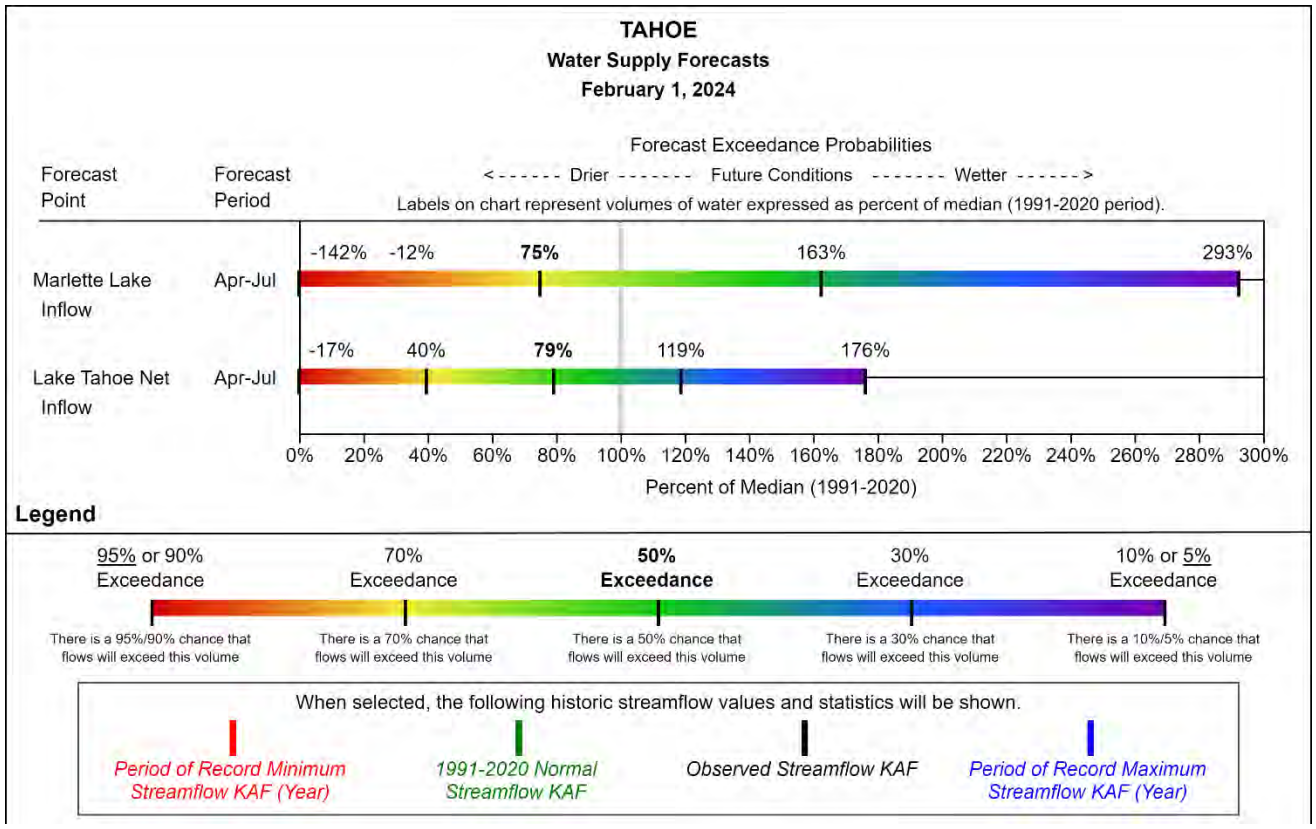




Statistical shading breaks at 10th, 30th, 50th, 70th, and 90th percentiles.
For more information visit: 30 year normal calculation description

Important Information about Forecast Coordination: Hydrologists with the NRCS and National Weather Service California Nevada River Forecast Center (CNRFC) coordinate Lake Tahoe Rise, Truckee River at Farad, Little Truckee River near Boca, and the Carson River at Ft. Churchill forecasts (following page) using output of their respective hydrology models at the request of the Bureau of Reclamation. The NRCS model is a statistical model based on the current data as of the first of each month. The CNRFC ensemble forecasting system incorporates near-term weather prediction and climatology into their model. These models can provide different answers because of the nature of the model systems, and from the inclusion of future weather in the CNRFC model. The hydrologists agree on forecast values using guidance from both models to best provide an accurate water supply forecast for these points.


TAHOE
Water Supply Forecasts
February 1, 2024
Forecast Exceedance Probabilities
Forecast Point
Forecast Period
< ------- Drier ------- Future Conditions ------- Wetter ------- >
Labels on chart represent volumes of water expressed in thousand acre-feet.
Marlette Lake Inflow
Apr-Jul
-0.57 -0.05 0.3 0.65 1.2
Lake Tahoe Net Inflow
Apr-Jul
-17.6 40 80 120 178
0% 20% 40% 60% 80% 100% 120% 140% 160% 180% 200% 220% 240% 260% 280% 300%
Percent of Median (1991-2020)
Legend
95% or 90% Exceedance
There is a 95%/90% chance that flows will exceed this volume
70% Exceedance
There is a 70% chance that flows will exceed this volume
50% Exceedance
There is a 50% chance that flows will exceed this volume
30% Exceedance
There is a 30% chance that flows will exceed this volume
10% or 5% Exceedance
There is a 10%/5% chance that flows will exceed this volume
When selected, the following historic streamflow values and statistics will be shown.
Period of Record Minimum Streamflow KAF (Year)
1991-2020 Normal Streamflow KAF
Observed Streamflow KAF
Period of Record Maximum Streamflow KAF (Year)
Some forecasts may be for volumes that are regulated or influenced by diversions and water management.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Forecast Period
< ------- Drier ------- Future Conditions ------- Wetter ------- >
Labels on chart represent volumes of water expressed as percent of median (1991-2020 period).
Marlette Lake Inflow
Apr-Jul
-142% -12% 75% 163% 293%
Lake Tahoe Net Inflow
Apr-Jul
-17% 40% 79% 119% 176%
0% 20% 40% 60% 80% 100% 120% 140% 160% 180% 200% 220% 240% 260% 280% 300%
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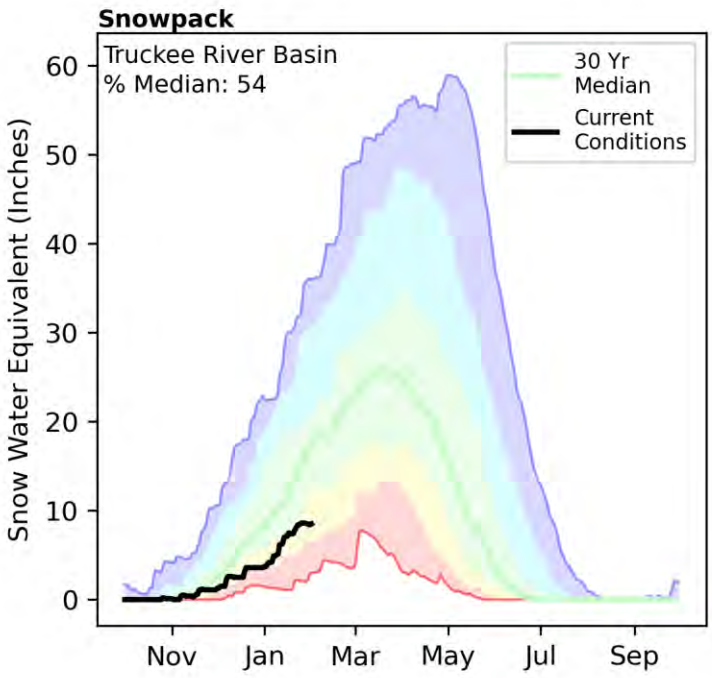
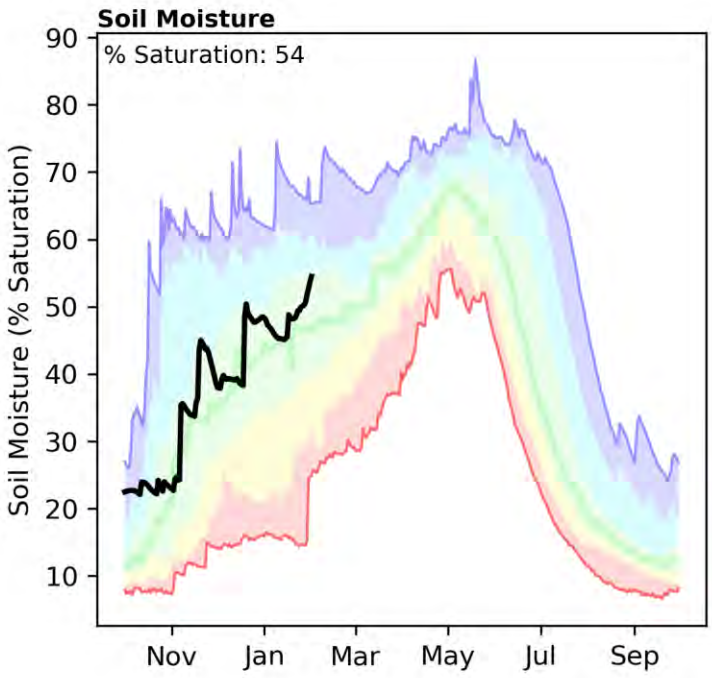
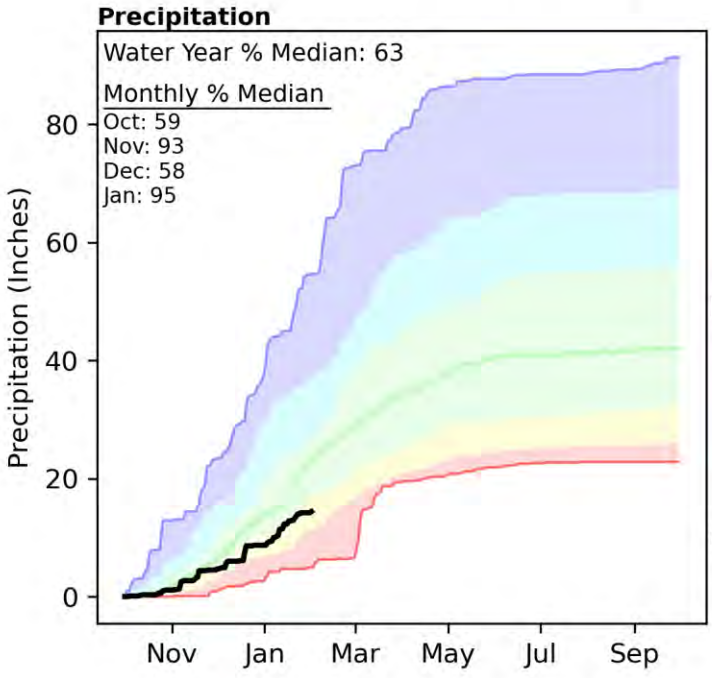
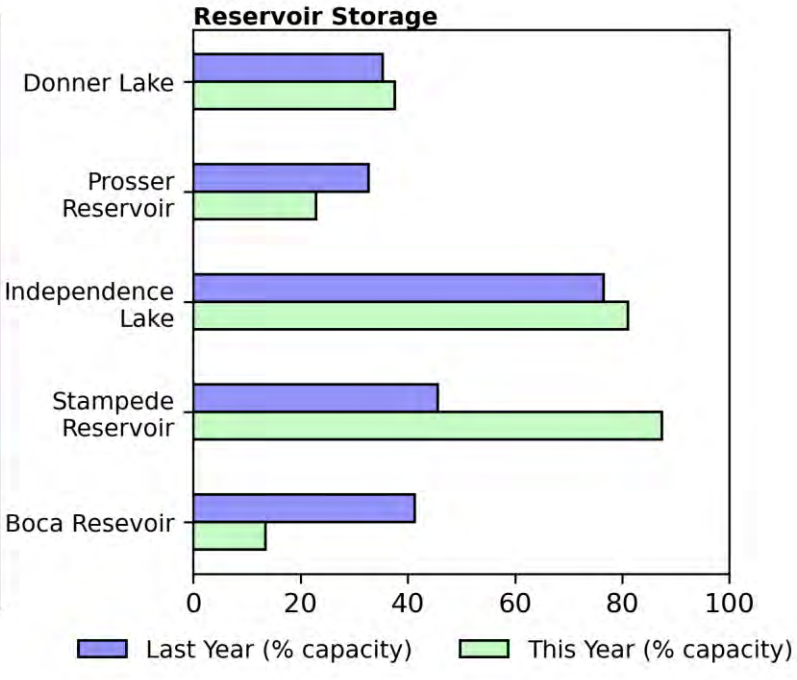
Truckee River Basin | February 1, 2024

Snowpack in the Truckee River Basin is well below normal at 54% of median, compared to 174% at this time last year. Precipitation in January was about normal at 95%, which brings the seasonal accumulation (October-January) to 63% of median. Soil moisture is at 54% saturation compared to 56% saturation last year. Reservoir storage is 70% of capacity, compared to 45% last year.









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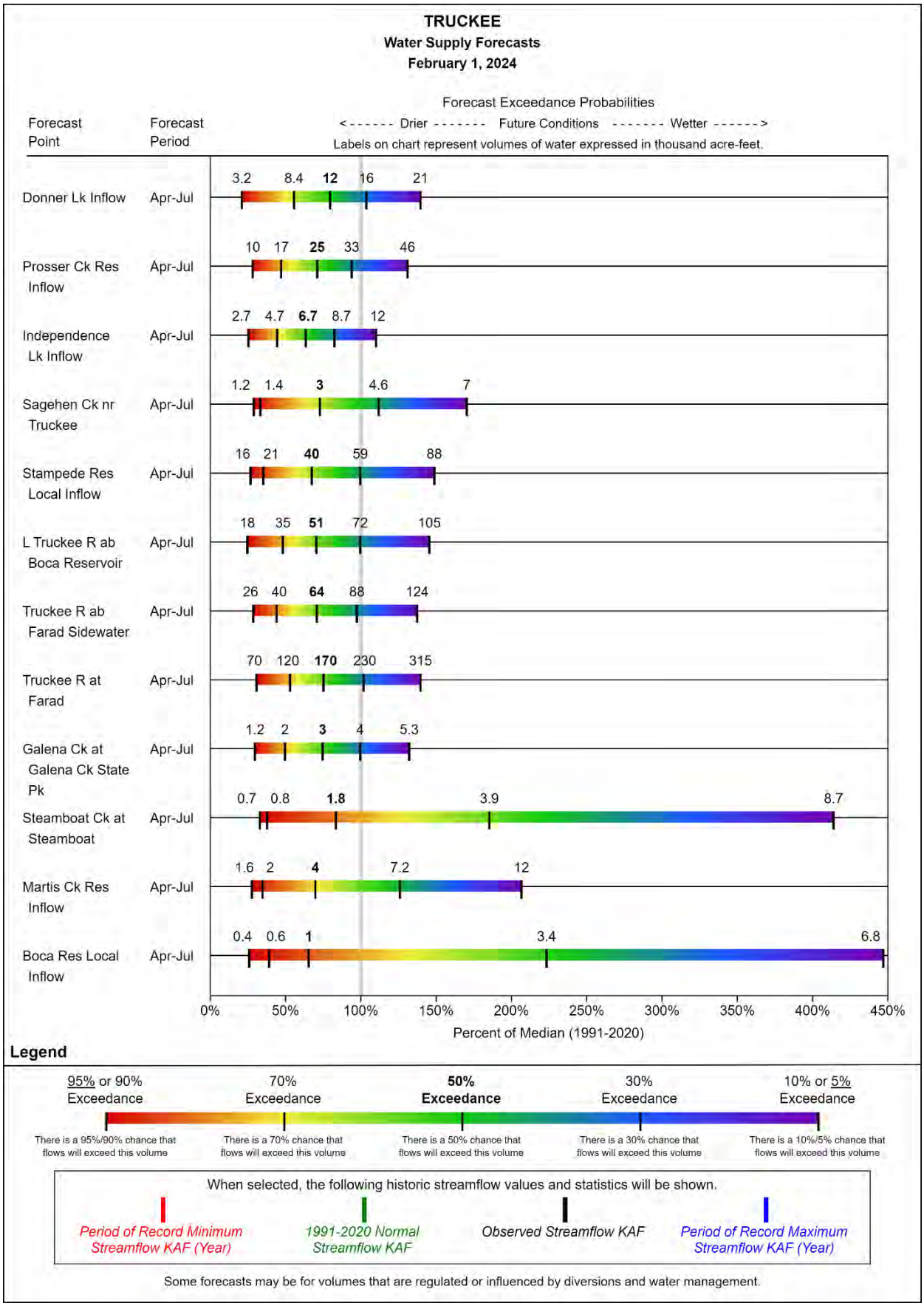
TRUCKEE
Water Supply Forecasts
February 1, 2024
Forecast Exceedance Probabilities
< ------- Drier ------- Future Conditions ------- Wetter ------- >
Labels on chart represent volumes of water expressed in thousand acre-feet.
Forecast Point
Forecast Period
Donner Lk Inflow Apr-Jul 3.2 8.4 12 16 21
Prosser Ck Res Inflow Apr-Jul 10 17 25 33 46
Independence Lk Inflow Apr-Jul 2.7 4.7 6.7 8.7 12
Sagehen Ck nr Truckee Apr-Jul 1.2 1.4 3 4.6 7
Stampede Res Local Inflow Apr-Jul 16 21 40 59 88
L Truckee R ab Boca Reservoir Apr-Jul 18 35 51 72 105
Truckee R ab Farad Sidewater Apr-Jul 26 40 64 88 124
Truckee R at Farad Apr-Jul 70 120 170 230 315
Galena Ck at Galena Ck State Pk Apr-Jul 1.2 2 3 4 5.3
Steamboat Ck at Steamboat Apr-Jul 0.7 0.8 1.8 3.9 8.7
Martis Ck Res Inflow Apr-Jul 1.6 2 4 7.2 12
Boca Res Local Inflow Apr-Jul 0.4 0.6 1 3.4 6.8
0% 50% 100% 150% 200% 250% 300% 350% 400% 450%
Percent of Median (1991-2020)
Legend
95% or 90% Exceedance
There is a 95%/90% chance that flows will exceed this volume
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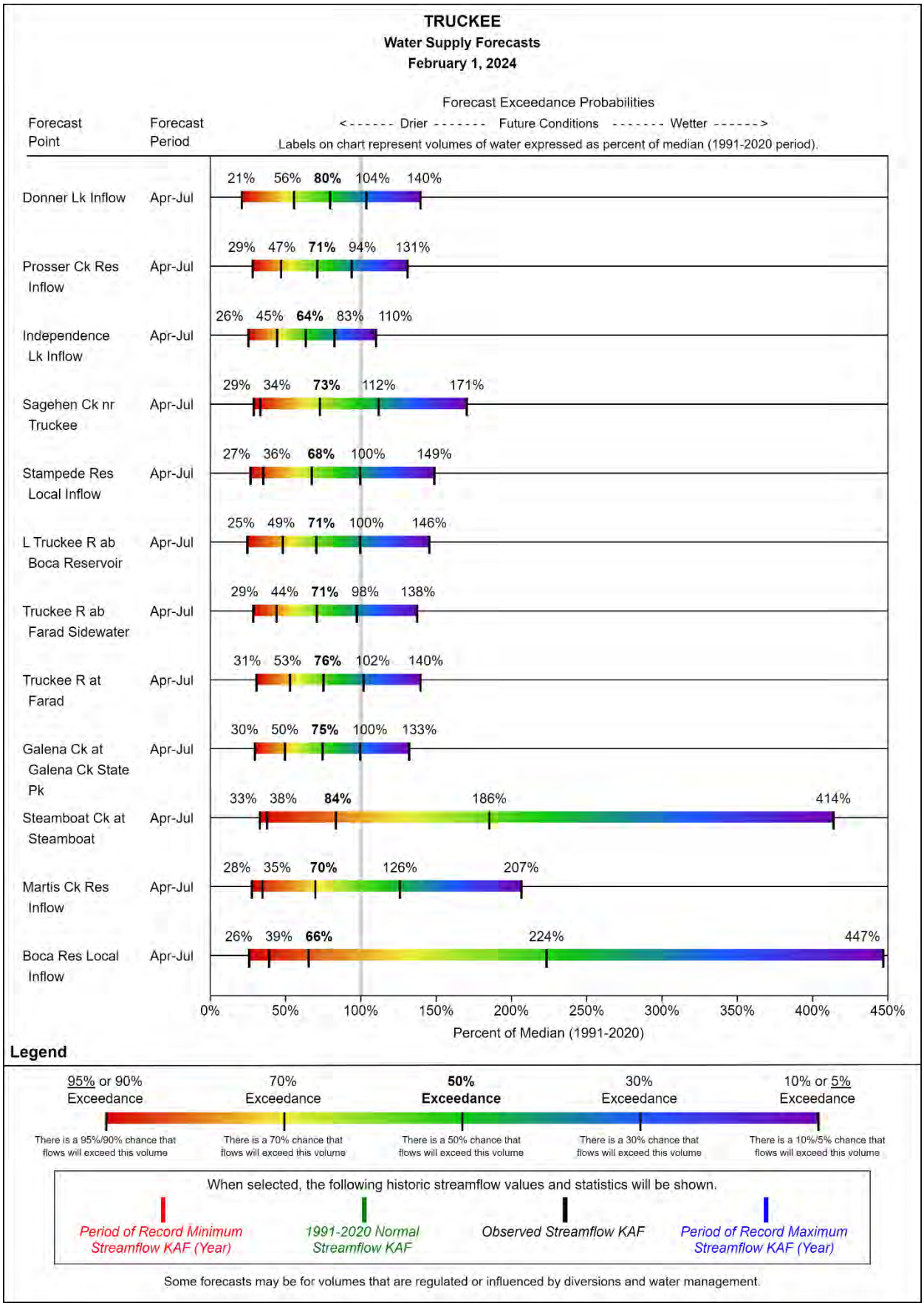
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Labels on chart represent volumes of water expressed as percent of median (1991-2020 period).
Donner Lk Inflow Apr-Jul 21% 56% 80% 104% 140%
Prosser Ck Res Inflow Apr-Jul 29% 47% 71% 94% 131%
Independence Lk Inflow Apr-Jul 26% 45% 64% 83% 110%
Sagehen Ck nr Truckee Apr-Jul 29% 34% 73% 112% 171%
Stampede Res Local Inflow Apr-Jul 27% 36% 68% 100% 149%
L Truckee R ab Boca Reservoir Apr-Jul 25% 49% 71% 100% 146%
Truckee R ab Farad Sidewater Apr-Jul 29% 44% 71% 98% 138%
Truckee R at Farad Apr-Jul 31% 53% 76% 102% 140%
Galena Ck at Galena Ck State Pk Apr-Jul 30% 50% 75% 100% 133%
Steamboat Ck at Steamboat Apr-Jul 33% 38% 84% 186% 414%
Martis Ck Res Inflow Apr-Jul 28% 35% 70% 126% 207%
Boca Res Local Inflow Apr-Jul 26% 39% 66% 224% 447%
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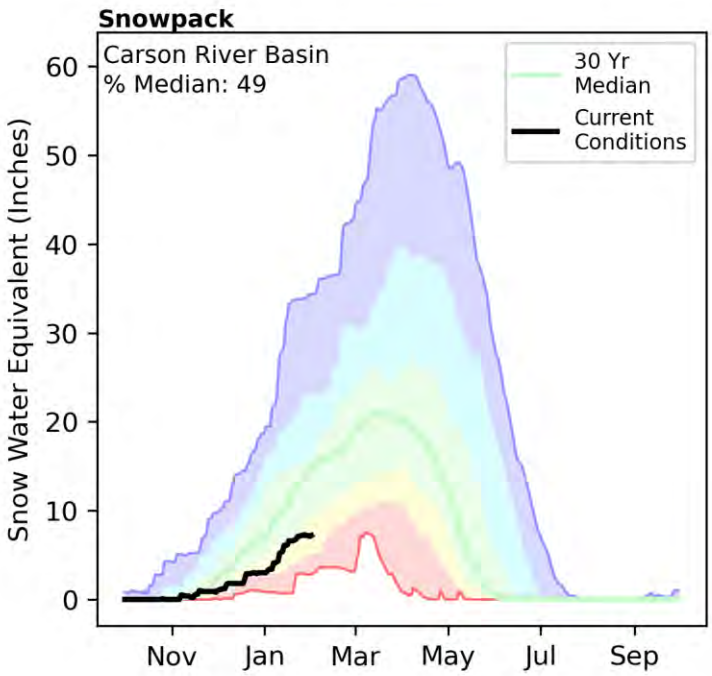
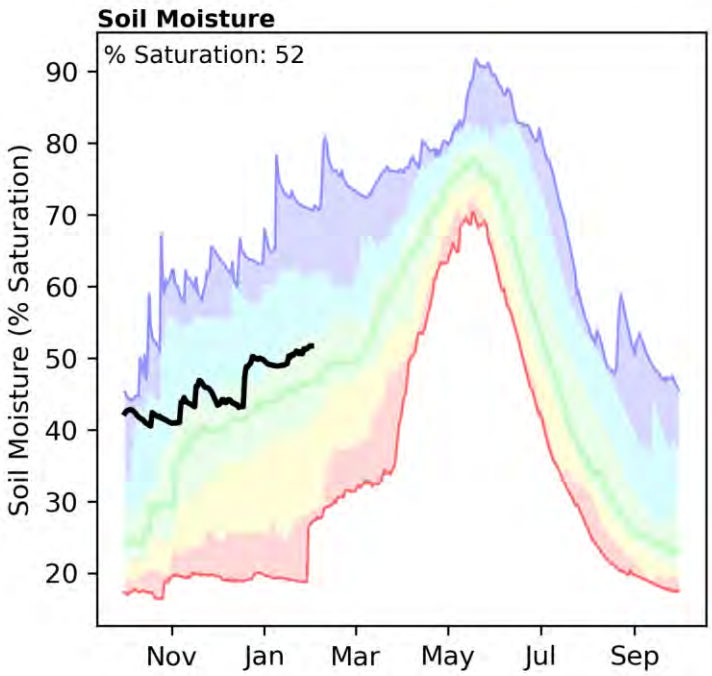
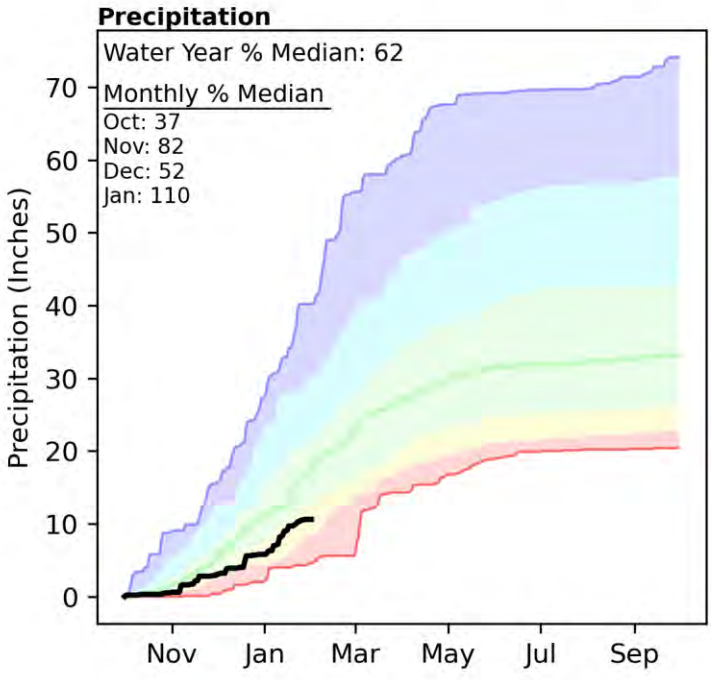
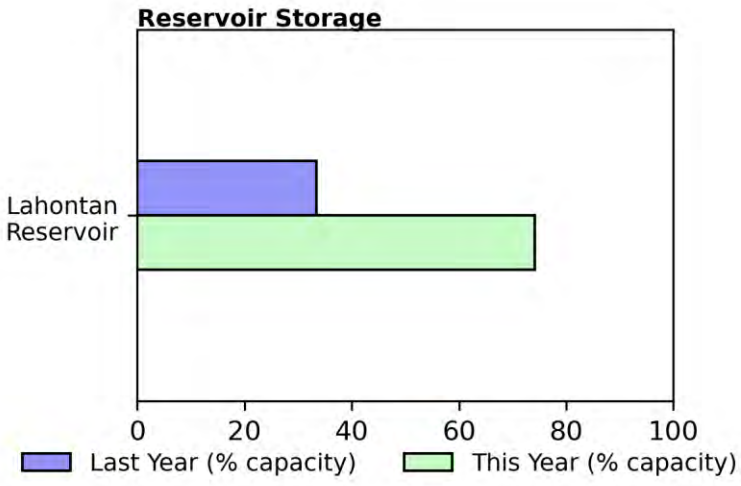
Snowpack in the Carson River Basin is well below normal at 49% of median, compared to 228% at this time last year. Precipitation in January was about normal at 110%, which brings the seasonal accumulation (October-January) to 62% of median. Soil moisture is at 52% saturation compared to 56% saturation last year. Reservoir storage is 74% of capacity, compared to 33% last year.



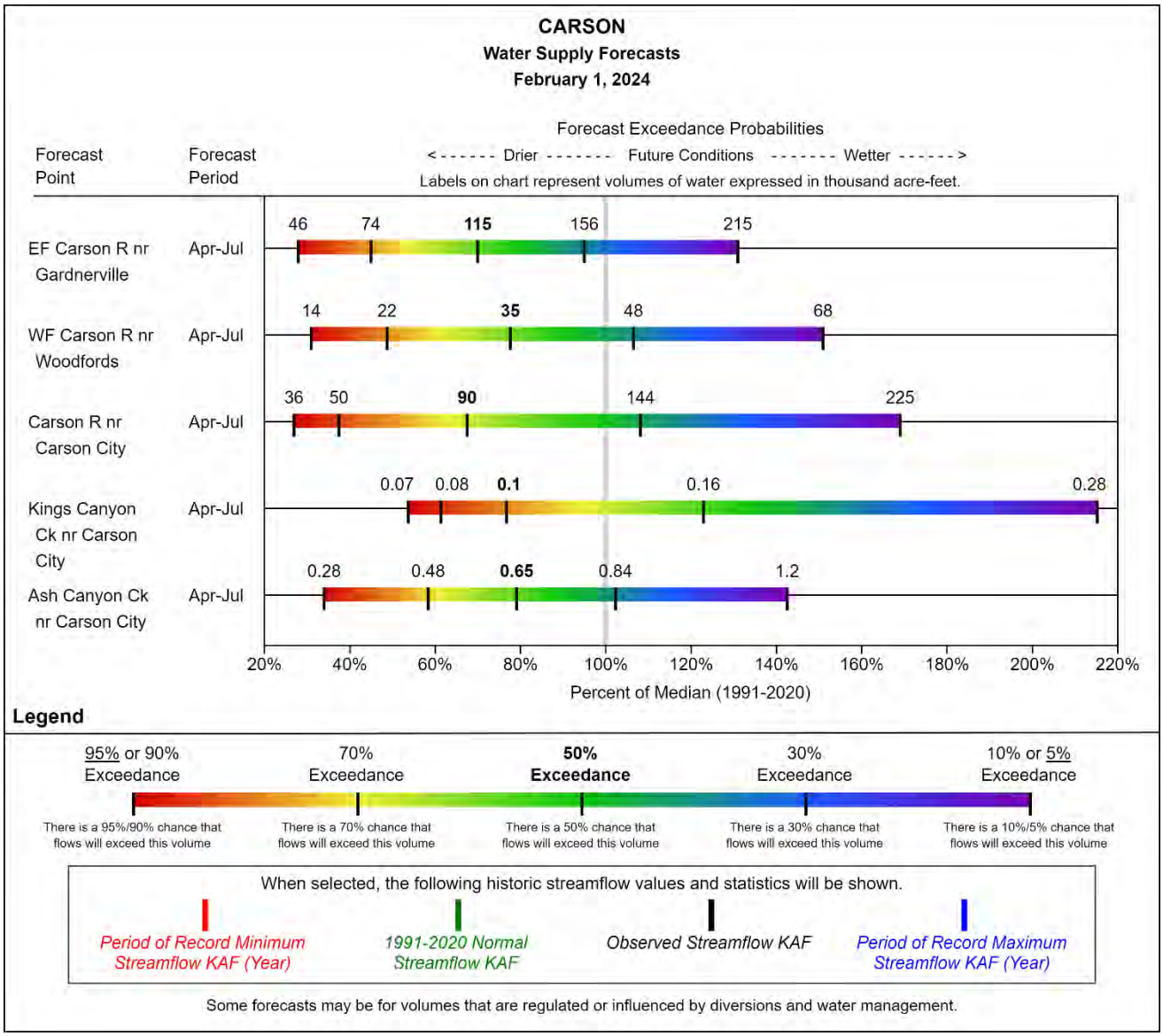


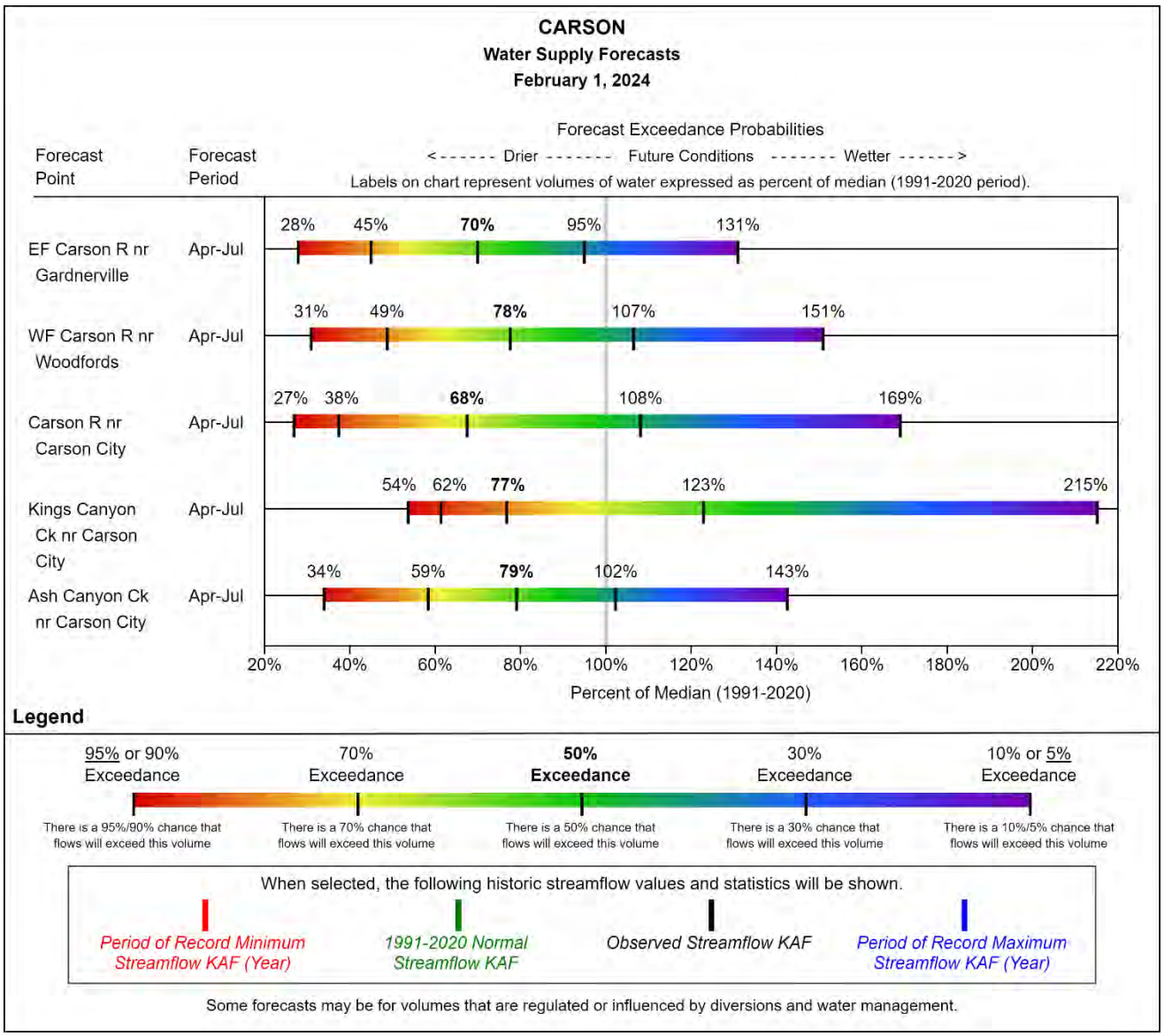




Statistical shading breaks at 10th, 30th, 50th, 70th, and 90th percentiles.
For more information visit: 30 year normal calculation description

Important Information about Forecast Coordination: Hydrologists with the NRCS and National Weather Service California Nevada River Forecast Center (CNRFC) coordinate Lake Tahoe Rise, Truckee River at Farad, Little Truckee River near Boca, and the Carson River at Ft. Churchill forecasts (following page) using output of their respective hydrology models at the request of the Bureau of Reclamation. The NRCS model is a statistical model based on the current data as of the first of each month. The CNRFC ensemble forecasting system incorporates near-term weather prediction and climatology into their model. These models can provide different answers because of the nature of the model systems, and from the inclusion of future weather in the CNRFC model. The hydrologists agree on forecast values using guidance from both models to best provide an accurate water supply forecast for these points.


CARSON
Water Supply Forecasts
February 1, 2024
Forecast Exceedance Probabilities
Forecast Point
Forecast Period
< - - - - - - - Drier - - - - - - - Future Conditions - - - - - - - Wetter - - - - - - >
Labels on chart represent volumes of water expressed in thousand acre-feet.
EF Carson R nr Gardnerville
Apr-Jul
46 74 115 156 215
WF Carson R nr Woodfords
Apr-Jul
14 22 35 48 68
Carson R nr Carson City
Apr-Jul
36 50 90 144 225
Kings Canyon Ck nr Carson City
Apr-Jul
0.07 0.08 0.1 0.16 0.28
Ash Canyon Ck nr Carson City
Apr-Jul
0.28 0.48 0.65 0.84 1.2
20% 40% 60% 80% 100% 120% 140% 160% 180% 200% 220%
Percent of Median (1991-2020)
Legend
95% or 90% Exceedance
There is a 95%/90% chance that flows will exceed this volume
70% Exceedance
There is a 70% chance that flows will exceed this volume
50% Exceedance
There is a 50% chance that flows will exceed this volume
30% Exceedance
There is a 30% chance that flows will exceed this volume
10% or 5% Exceedance
There is a 10%/5% chance that flows will exceed this volume
When selected, the following historic streamflow values and statistics will be shown.
Period of Record Minimum Streamflow KAF (Year)
1991-2020 Normal Streamflow KAF
Observed Streamflow KAF
Period of Record Maximum Streamflow KAF (Year)
Some forecasts may be for volumes that are regulated or influenced by diversions and water management.


CARSON
Water Supply Forecasts
February 1, 2024
Forecast Exceedance Probabilities
Forecast Point
Forecast Period
<------- Drier ------- Future Conditions ------- Wetter ------->
Labels on chart represent volumes of water expressed as percent of median (1991-2020 period).
EF Carson R nr Gardnerville
Apr-Jul
28% 45% 70% 95% 131%
WF Carson R nr Woodfords
Apr-Jul
31% 49% 78% 107% 151%
Carson R nr Carson City
Apr-Jul
27% 38% 68% 108% 169%
Kings Canyon Ck nr Carson City
Apr-Jul
54% 62% 77% 123% 215%
Ash Canyon Ck nr Carson City
Apr-Jul
34% 59% 79% 102% 143%
20% 40% 60% 80% 100% 120% 140% 160% 180% 200% 220%
Percent of Median (1991-2020)
Legend
95% or 90% Exceedance
There is a 95%/90% chance that flows will exceed this volume
70% Exceedance
There is a 70% chance that flows will exceed this volume
50% Exceedance
There is a 50% chance that flows will exceed this volume
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There is a 30% chance that flows will exceed this volume
10% or 5% Exceedance
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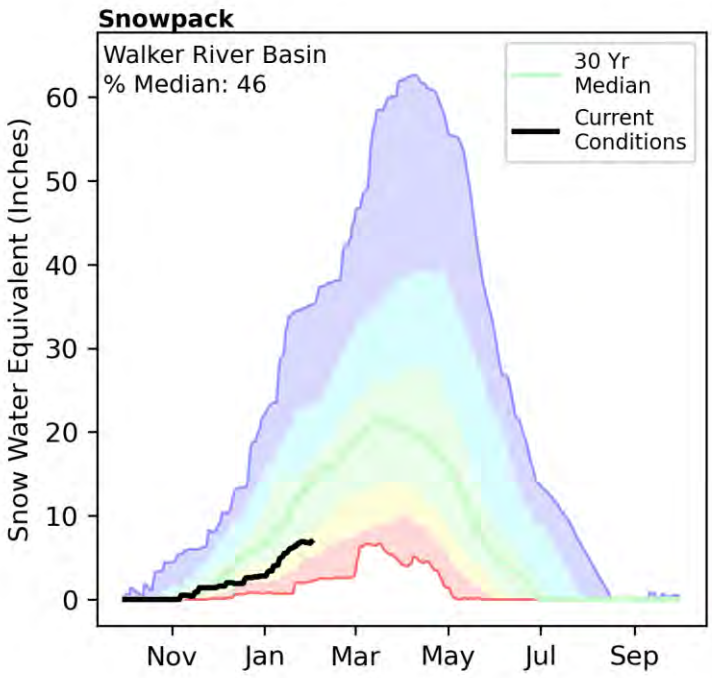
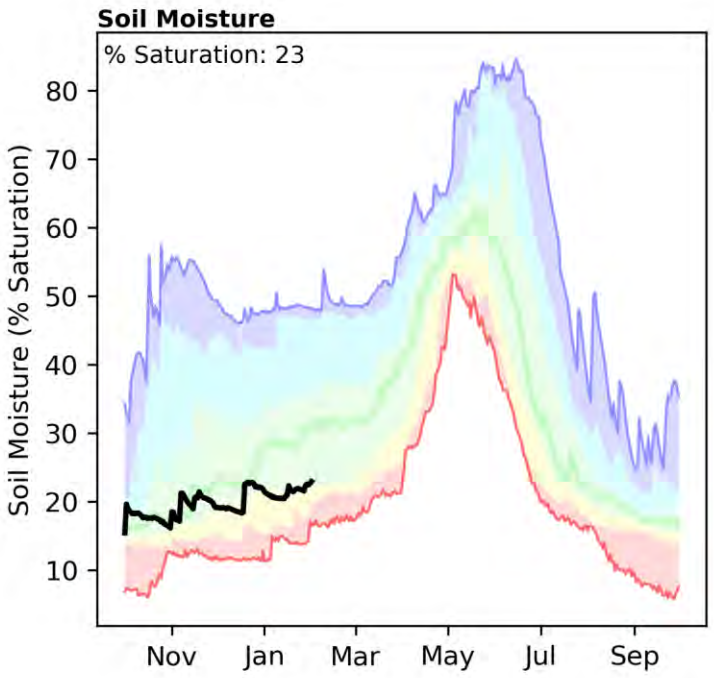
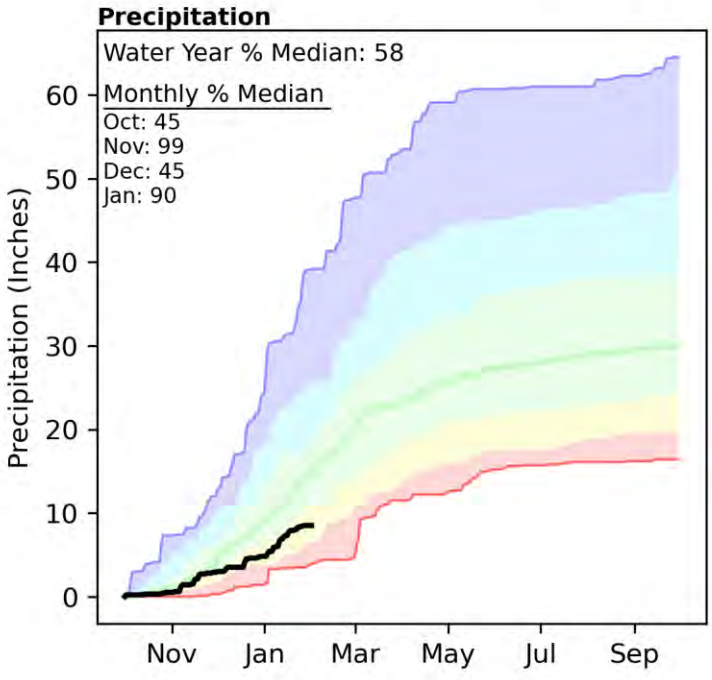
1991-2020 Normal Streamflow KAF
Observed Streamflow KAF
Period of Record Maximum Streamflow KAF (Year)
Some forecasts may be for volumes that are regulated or influenced by diversions and water management.

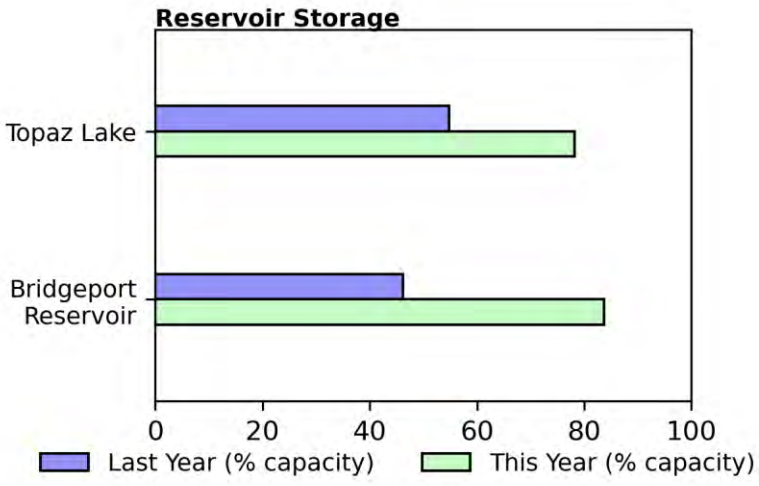
Walker River Basin | February 1, 2024

Snowpack in the Walker River Basin is well below normal at 46% of median, compared to 242% at this time last year. Precipitation in January was about normal at 90%, which brings the seasonal accumulation (October-January) to 58% of median. Soil moisture is at 23% saturation compared to 41% saturation last year. Reservoir storage is 81% of capacity, compared to 51% last year.

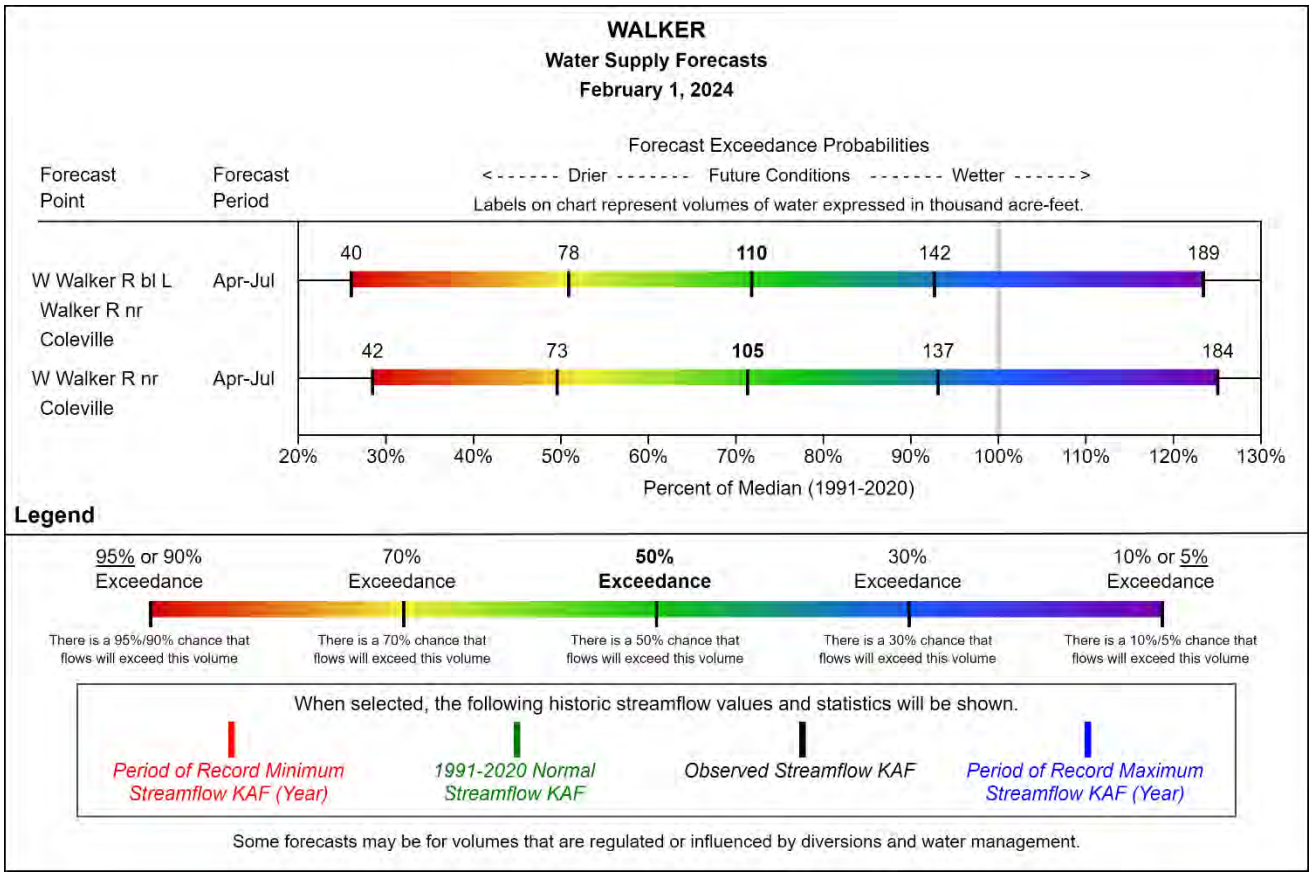


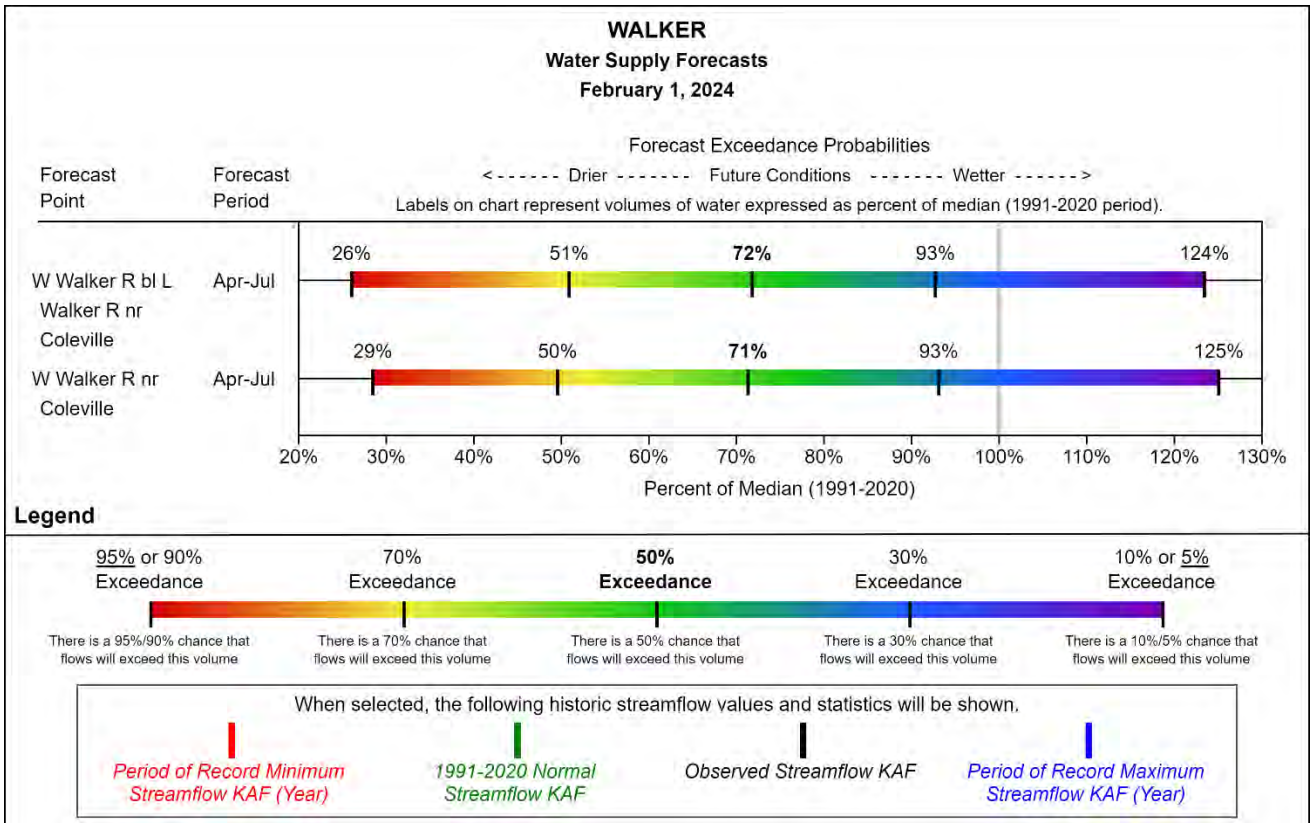






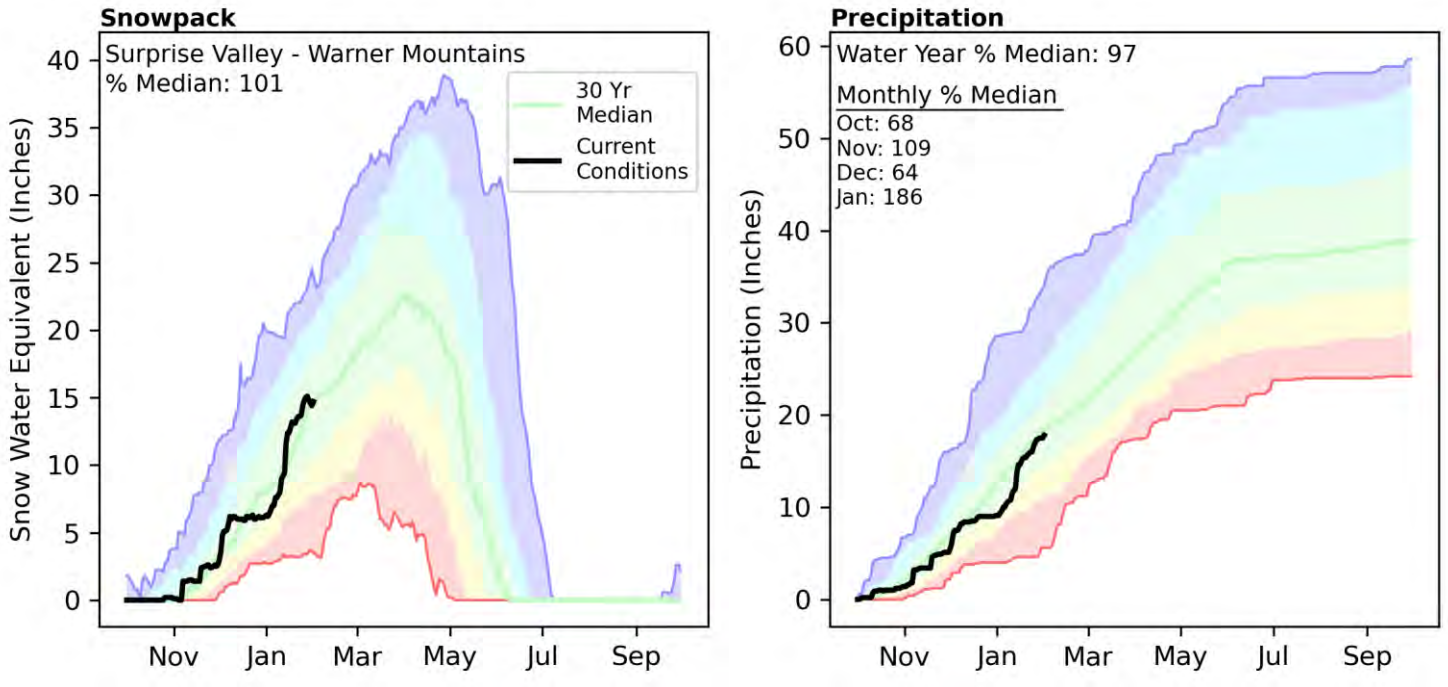
Statistical shading breaks at 10th, 30th, 50th, 70th, and 90th percentiles.
For more information visit: 30 year normal calculation description


WALKER
Water Supply Forecasts
February 1, 2024
Forecast Exceedance Probabilities
Forecast Point
Forecast Period
< - - - - - - Drier - - - - - - - Future Conditions - - - - - - - Wetter - - - - - - >
Labels on chart represent volumes of water expressed in thousand acre-feet.
W Walker R bl L Walker R nr Coleville
Apr-Jul
40
78
110
142
189
W Walker R nr Coleville
Apr-Jul
42
73
105
137
184
20% 30% 40% 50% 60% 70% 80% 90% 100% 110% 120% 130%
Percent of Median (1991-2020)
Legend
95% or 90% Exceedance
There is a 95%/90% chance that flows will exceed this volume
70% Exceedance
There is a 70% chance that flows will exceed this volume
50% Exceedance
There is a 50% chance that flows will exceed this volume
30% Exceedance
There is a 30% chance that flows will exceed this volume
10% or 5% Exceedance
There is a 10%/5% chance that flows will exceed this volume
When selected, the following historic streamflow values and statistics will be shown.
Period of Record Minimum Streamflow KAF (Year)
1991-2020 Normal Streamflow KAF
Observed Streamflow KAF
Period of Record Maximum Streamflow KAF (Year)
Some forecasts may be for volumes that are regulated or influenced by diversions and water management.


WALKER
Water Supply Forecasts
February 1, 2024
Forecast Exceedance Probabilities
Forecast Point
Forecast Period
< - - - - - - Drier - - - - - - - Future Conditions - - - - - - - Wetter - - - - - - >
Labels on chart represent volumes of water expressed as percent of median (1991-2020 period).
W Walker R bl L Walker R nr Coleville
Apr-Jul
26%
51%
72%
93%
124%
W Walker R nr Coleville
Apr-Jul
29%
50%
71%
93%
125%
20% 30% 40% 50% 60% 70% 80% 90% 100% 110% 120% 130%
Percent of Median (1991-2020)
Legend
95% or 90% Exceedance
There is a 95%/90% chance that flows will exceed this volume
70% Exceedance
There is a 70% chance that flows will exceed this volume
50% Exceedance
There is a 50% chance that flows will exceed this volume
30% Exceedance
There is a 30% chance that flows will exceed this volume
10% or 5% Exceedance
There is a 10%/5% chance that flows will exceed this volume
When selected, the following historic streamflow values and statistics will be shown.
Period of Record Minimum Streamflow KAF (Year)
1991-2020 Normal Streamflow KAF
Observed Streamflow KAF
Period of Record Maximum Streamflow KAF (Year)

Surprise Valley - Warner Mountains | February 1, 2024

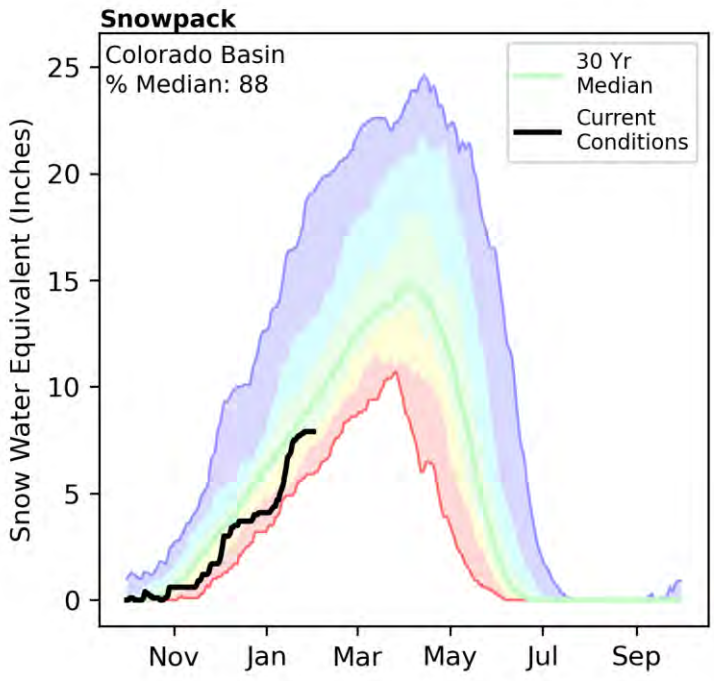
Snowpack in the Surprise Valley - Warner Mountains is about normal at 101% of median, compared to 143% at this time last year. Precipitation in January was well above normal at 186%, which brings the seasonal accumulation (October-January) to 97% of median.

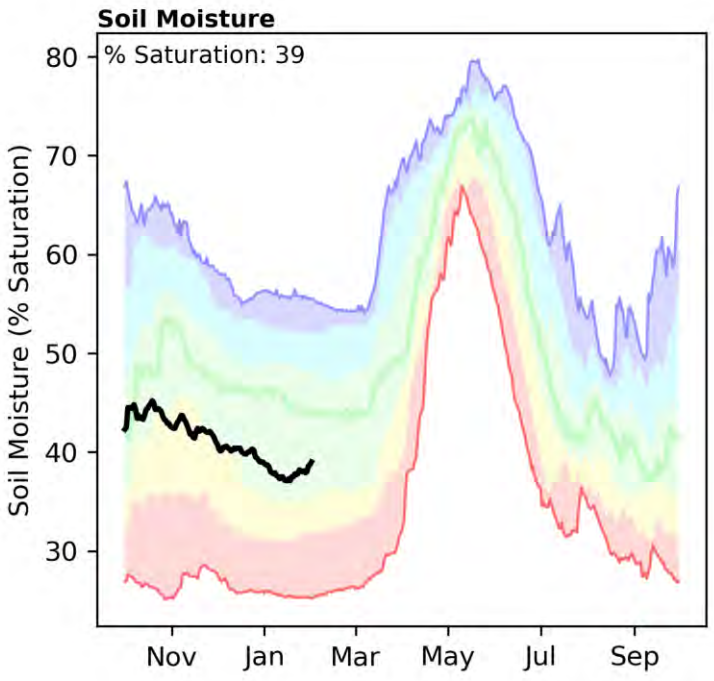


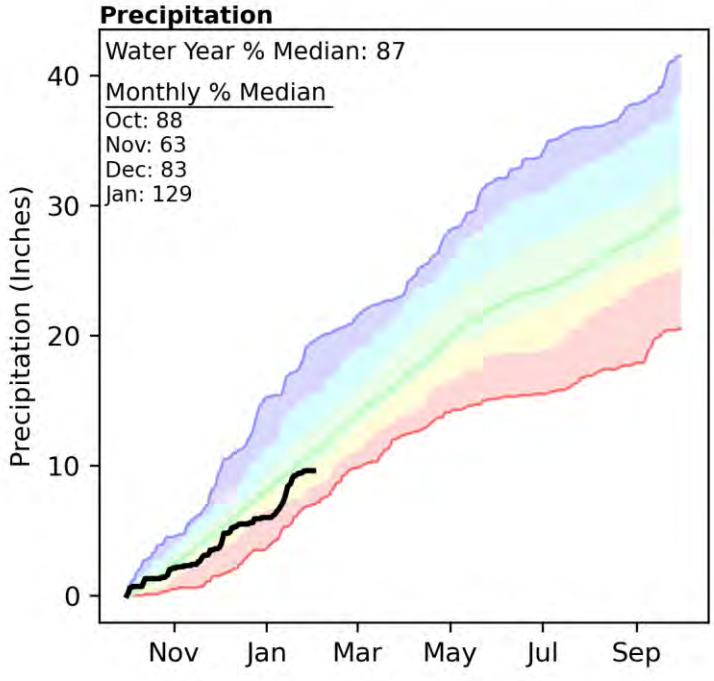
Statistical shading breaks at 10th, 30th, 50th, 70th, and 90th percentiles.
For more information visit: 30 year normal calculation description

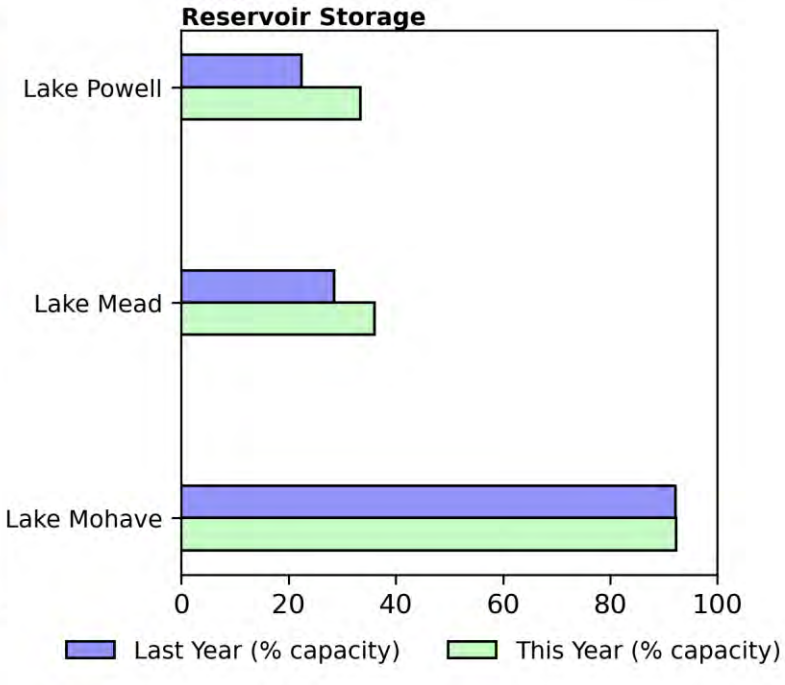
Colorado Basin | February 1, 2024

Snowpack in the Colorado Basin above Lake Powell is below normal at 88% of median, compared to 141% at this time last year. Precipitation in January was above normal at 129%, which brings the seasonal accumulation (October-January) to 87% of median. Soil moisture is at 39% saturation compared to 48% saturation last year. Reservoir storage in the Lower Colorado Basin is 36% of capacity, compared to 27% last year.









Statistical shading breaks at 10th, 30th, 50th, 70th, and 90th percentiles.
For more information visit: 30 year normal calculation description

Data Current As of: 2/6/2024 4:49:41 PM

Colorado
Streamflow Forecasts - February 1, 2024

Colorado	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Median	30% (KAF)	10% (KAF)	30yr Median (KAF)
		Forecast Exceedance Probabilities For Risk Assessment Chance that actual volume will exceed forecast						
Lake Powell Inflow [2]	APR-JUL	2490	3780	4800	78%	5950	7850	6130
Virgin R at Littlefield	APR-JUL	7.3	19.9	32	97%	47	74	33
Virgin R nr Hurricane	APR-JUL	3.3	12.9	23	74%	36	60	31

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 End of January, 2024	Current (KAF)	Last Year (KAF)	Median (KAF)	Capacity (KAF)
Lake Powell	8138.1	5456.1	13471.0	24322.0
Lake Mead	9413.0	7459.0	15227.0	26159.0
Lake Mohave	1670.0	1668.0	1658.0	1810.0

Watershed Snowpack Analysis February 1, 2024	# of Sites	% Median	Last Year % Median
Virgin	9	67%	223%
Upper Colorado	131	85%	144%

Appendix: Interpreting the Streamflow Forecast Chart

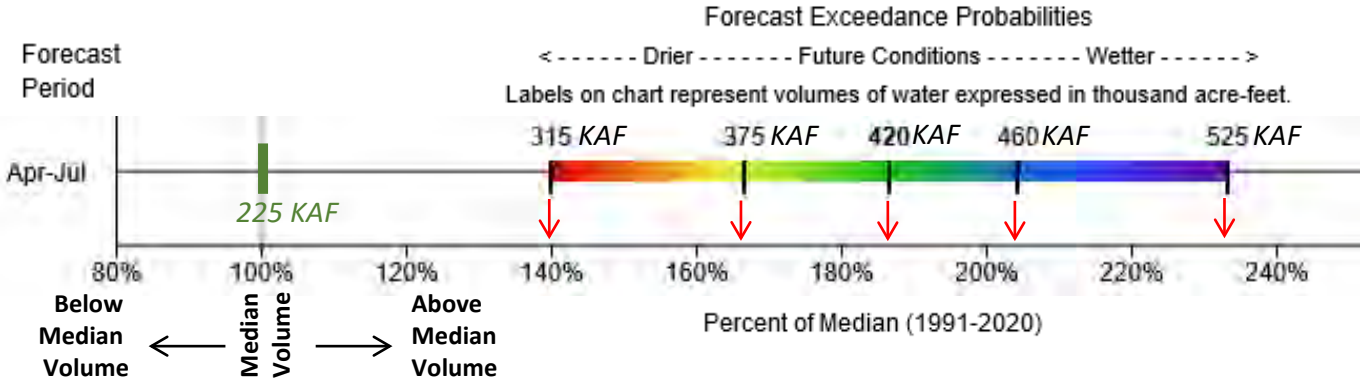
Forecast Exceedance Probabilities for Risk Assessment
Chance that actual volume will exceed forecast

Provided by: NRCS NV

Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Median	30% (KAF)	10% (KAF)	30yr Median (KAF)
APR-JUL	315	375	420	187%	460	525	225

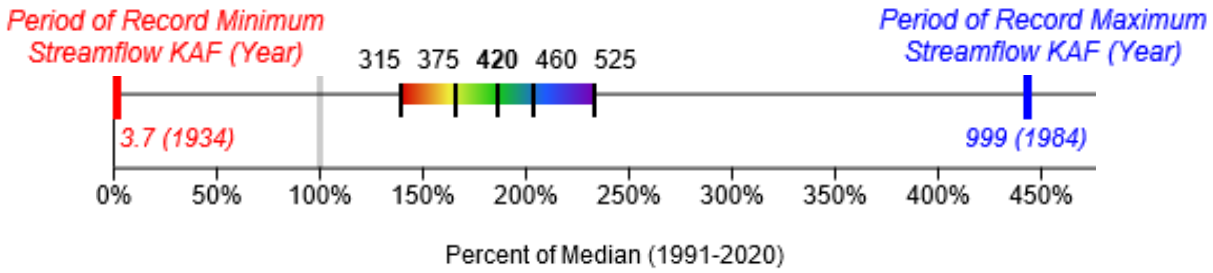
The Forecast Chart (below) provides an alternative to the tables (above) used in the basin summaries. The chart displays the forecast exceedance range as a colored bar. The vertical lines on the bar signify the five forecast exceedances.

The numbers above the forecast bar are the five exceedance probability volumes in thousand acre-feet (KAF). Each exceedance forecast's percent of median can be estimated by looking at the horizontal axis. The green line and number centered above 100% on the horizontal axis represents the 1981-2010 historical median streamflow for the forecast period in KAF.



In the example above, the entire forecast bar is shifted right of the green bar indicating a forecast for above the median Apr-Jul streamflow of 225KAF. The 50% exceedance is represented by the black line in the green portion of the colored bar. This represents a forecast volume of 420KAF which is ~185% of median. If drier than normal future conditions occur the 70% exceedance forecast may be more likely (375KAF or ~165% of median). If future conditions turn wetter than normal, the 30% exceedance forecast may be more likely (460KAF or ~205% of median). Water users are encouraged to consider the range of forecast exceedances instead of relying solely only on the 50% forecast.

In very wet or dry years forecasts may approach historical records. In these cases the period of record minimum or maximum may be displayed. The minimum is represented by a heavy red line, while the maximum is represented by a heavy blue line. The numbers below the red and blue lines represent the volume in KAF and the year it occurred in parentheses.

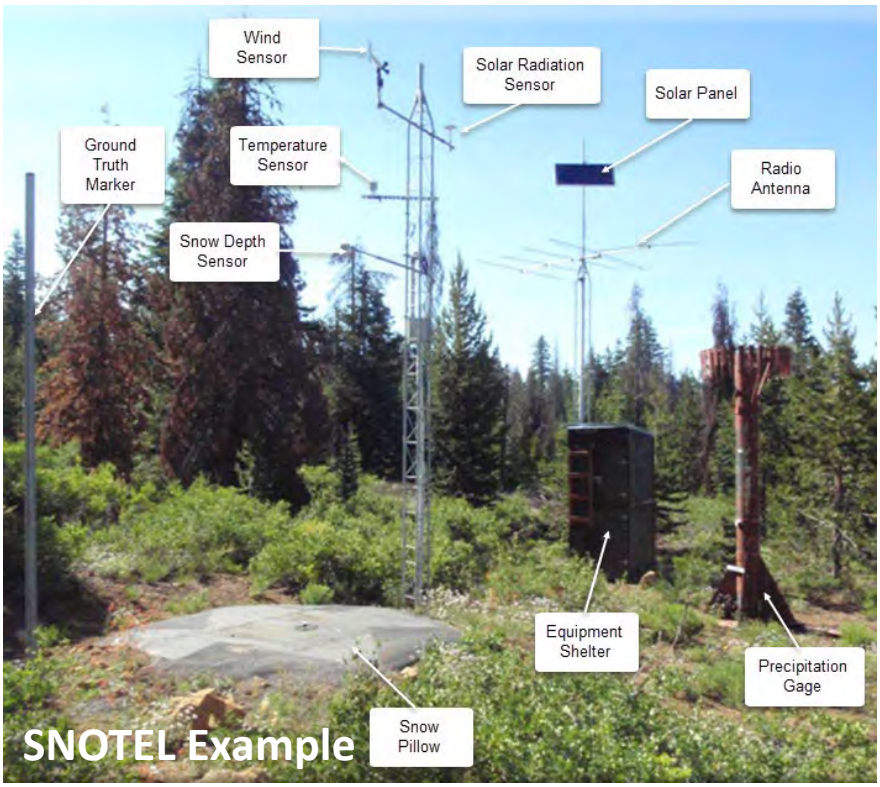


Click here for an online version which allows users to see averages instead of medians, as well as historic forecasts.

Appendix - SNOTEL and Snow Course Overview

SNOTEL

The NRCS operates an extensive, automated data collection network called SNOTEL (short for Snow Telemetry). SNOTEL sites are designed to operate unattended in remote mountain locations. Data are collected and transmitted hourly and available on the internet. Daily data (midnight values) are quality checked by NRCS hydrologists on at least a weekly basis. SNOTEL sites provide snowpack water content data via a pressure-sensing snow pillow. Other data include snow depth, water year precipitation accumulation, air temperature with daily maximums, minimums, and averages, soil moisture and soil temperature at depths of 2, 8 and 20 inches. The earliest NRCS SNOTEL sites have data back to 1981 or a bit earlier.



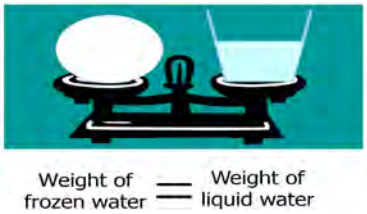
Snow Course

Snow courses are measurement transects where snow tubes are used by snow surveyors during the winter season to determine the depth and water content of the snowpack. Hollow snow tubes are used to vertically core the snowpack. The tubes are then weighed to determine the water content of the snow. Generally, snow courses are situated in meadows or forest openings protected from the wind. A snow course measurement is the average of a number of sample points, typically 5 to 10. Snow courses are measured on a monthly basis typically between February 1 and April 1. Snow courses provide a longer record than SNOTEL. The earliest snow courses in the Lake Tahoe and Truckee basins have data back to 1910.

Snow Water Equivalent (SWE):

Sometimes also called snow water content, this is the amount of water contained within the snowpack. It can be thought of as the depth of water (in inches) that would result if you melted the snowpack. For example, if the snowpack was contained 12 inches of SWE, then when melted there would a puddle of water 12 inches deep on the ground.

SWE measurements made by snow pillows or snow tubes rely on the fact that water weighs the same whether it is liquid or frozen.



Snow core inside snow tubes

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https://www.nrcs.usda.gov/resources/data-and-reports/california-snow-survey

California Water Supply Outlook