

Utah Climate and Water Report

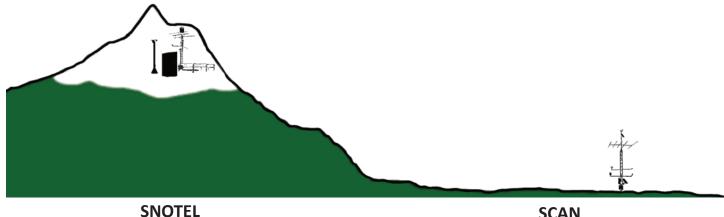
January 1, 2022



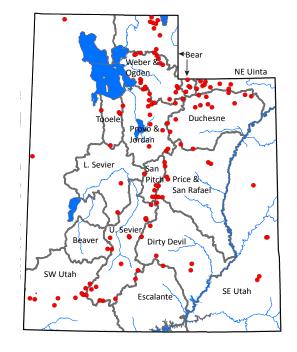
Settlement Canyon Reservoir, near Tooele
Photo by Jordan Clayton

Utah Climate and Water Report

The purpose of the Climate and Water Report is to provide a snapshot of current and immediate past climatic conditions and other information useful to agricultural and water user interests in Utah. The report utilizes data from several sources that represent specific parameters (streamflow data from the United States Geological Survey, reservoir data from the Bureau of Reclamation, and other sources), geography including high elevation United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) Snowpack Telemetry (SNOTEL) data, and agriculturally important data from the USDA-NRCS Soil Climate Analysis Network (SCAN). Data on precipitation, soil moisture, soil temperature, reservoir storage, and streamflow are analyzed and presented. These data analyses can be used to increase irrigation efficiency and agricultural production. As with all data and analyses, there are limitations due to data quality, quantity, and spatial application.

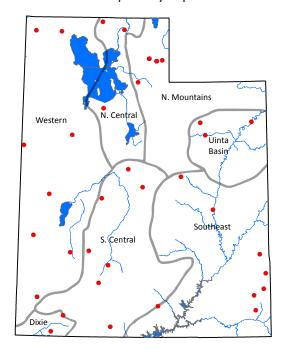


- Mountainous areas
- High elevation (>6,000 ft)
- Water supply forecasting
- Installed where snow pack represents the water supply



SCAN

- Agricultural and range lands
- Mid elevation (3 7,000 ft)
- Irrigation efficiency and rangeland productivity
- Installed on spatially representative soils



Utah General Summary January 1, 2022

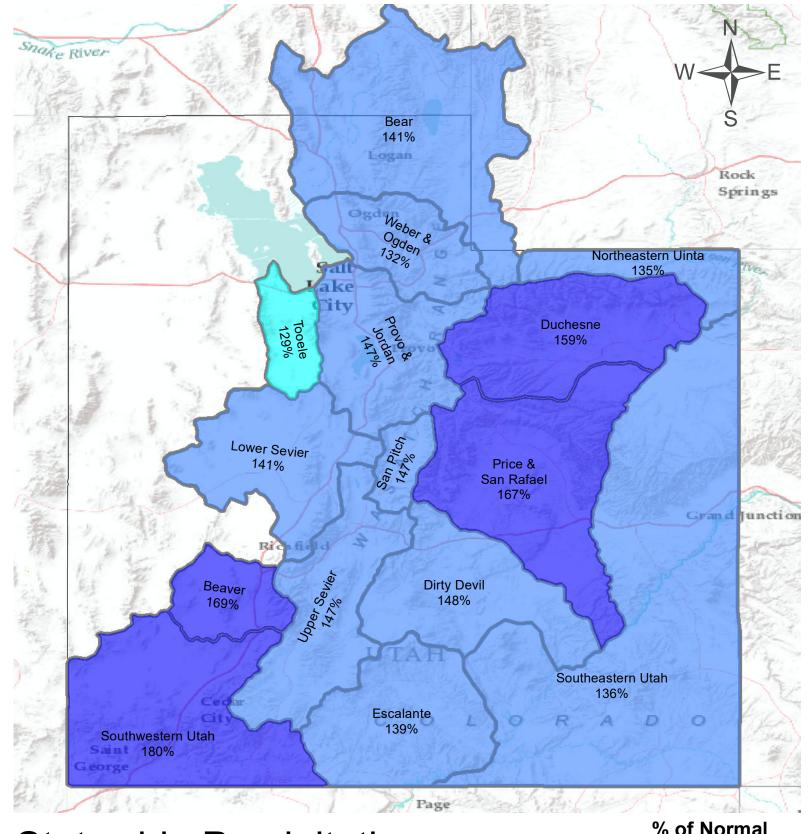
This report has been reorganized to better reflect two distinct geographic areas being monitored – the low elevation valley sites (Soil Climate Analysis Network) that are critical for agricultural production and operations, and the high elevation mountainous areas where water supply is generated (SNOwTELemetry). Most of the graphs have been updated to utilize daily data versus the old monthly bar charts so that the timing and distribution of precipitation and other events can be seen. The timing distribution of precipitation can be as important as the overall amount in an agricultural context. Questions, comments and suggestions are welcome and should be directed to jordan.clayton@usda.gov.

Current Conditions

Luckily, the pattern change hoped for after a very dry November materialized in December. Utah's valley locations accumulated 1.4 inches of precipitation on average during the month. This puts the 2022 water year total at 3.6 inches. The regions of Utah that needed it most fared the best during December: South Central and Western and Dixie. More good news comes by way of soil moisture levels which are at 39%, compared to 25% last year, and well above normal. Soil temperatures are above normal in Utah with the exception of the Uinta Basin, where they are closer to normal.

Utah's mountains received greater than 6 inches of precipitation during December, which was more than the previous two months combined. This brings the statewide water-year-to-date precipitation total to 145% of normal, compared with 56% at this time last year. All of Utah's major basins have received around 130% of normal precipitation or greater; Southwestern Utah has so far fared the best at 180%. Soil moisture levels have also turned around nicely in our mountain areas, up 32% from last year and currently around the 80th percentile of observations going back 20 years. Still, Water Availability Indexes (WAIs) for Utah's major basins are alarmingly low for numerous areas. WAIs combine current streamflow with reservoir volume and compare with previous years. Current low WAI values for many of Utah's watersheds reflects our depleted reservoir storage levels--at only 50% of capacity statewide.

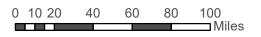
As expected, December's wetness has had a positive impact on Utah's drought conditions. None of Utah is experiencing Exceptional (D4) drought anymore, but the entire state still persists in a level of drought between Abnormally Dry (D0) and Extreme (D3). Although this is good news, we will need consistent above-average conditions in the months ahead to eliminate the Extreme Drought currently affecting 34% of the state.



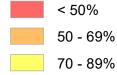
Statewide Precipitation

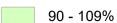
As of January 1, 2022:

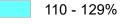
145% of Normal Precipitation 196% of Normal Precipitation Last Month

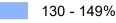


% of Normal











Basin or Region	Dec EOM [*] Storage	December Flow	Storage + Flow	Percentile	WAI#	Years with similiar WA
	KAF^	KAF^	KAF^	%		
Bear River	537	2.4	539	49	-0.1	15, 14, 90, 89
Woodruff Narrows	12.0	2.4	14.4	23	-2.2	13, 89, 05, 95
Little Bear	8.6	2.1	10.7	13	-3.1	04, 16, 14, 02
Ogden	27.4	2.0	29.4	7	-3.6	93, 01, 04, 91
Weber	86.0	6.1	92.1	15	-2.9	02, 91, 13, 19
Provo River	266.5	2.9	269.4	7	-3.6	14, 16, 04, 08
Western Uinta	173.1	2.5	175.6	72	1.9	16, 97, 00, 17
Eastern Uinta	17.8	2.1	20.0	9	-3.4	90, 03, 14, 21
Blacks Fork	9.0	2.2	11.2	55	0.4	04, 86, 20, 18
Price	16.3	0.2	16.5	33	-1.5	08, 14, 09, 97
Smiths Creek	5.1	0.8	6.0	46	-0.3	13, 10, 06, 16
Joes Valley	21.2	1.0	22.1	2	-4.0	03, 91, 93, 17
Moab	0.9	0.3	1.2	50	0.0	11, 93, 02, 14
Upper Sevier River	33.4	7.8	41.2	12	-3.2	04, 05, 93, 92
San Pitch	0.0	0.2	0.2	2	-4.0	21, 01, 15, 19
Lower Sevier	41.8	10.0	51.7	12	-3.2	19, 05, 18, 93
Beaver	4.1	1.1	5.1	7	-3.6	03, 04, 00, 05
Virgin River	28.6	12.3	40.9	38	-1.0	10, 19, 18, 02

*EOM, end of month; #WAI, water availability index; ^KAF, thousand acre-feet.

What is a Water Availability Index?

The Water Availability Index (WAI) is an observed hydrologic indicator of current surface water availability within a watershed. The index is calculated by combining current reservoir storage with the previous months streamflow. WAI values are scaled from +4.1 (abundant supply) to -4.1 (extremely dry) with a value of zero (0) indicating median water supply as compared to historical analysis. WAI's are calculated in this fashion to be consistent with other hydroclimatic indicators such as the Palmer Drought Index and the Precipitation index.

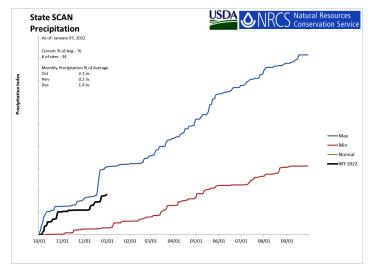
Utah Snow Surveys has also chosen to display the WAI value as well as a PERCENT CHANCE OF NON-EXCEEDANCE. While this is a cumbersome name, it has the simplest application. It can be best thought of as a scale of 1 to 99 with 1 being the drought of record (driest possible conditions) and 99 being the flood of record (wettest possible conditions) and a value of 50 representing average conditions. This rating scale is a percentile rating as well, for example a WAI of 75% means that this years water supply is greater than 75% of all historical events and that only 25% of the time has it been exceeded. Conversely a WAI of 10% means that 90% of historical events have been greater than this one and that only 10% have had less total water supply. This scale is comparable between basins: a WAI of 50% means the same relative ranking on watershed A as it does on watershed B, which may not be strictly true of the +4 to -4 scale.

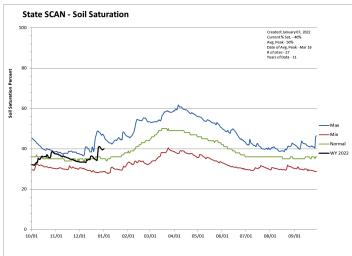
For more information on the WAI go to: https://www.nrcs.usda.gov/wps/portal/nrcs/main/ut/snow/ on the water supply page. The entire period of historical record for reservoir storage and streamflow is available.

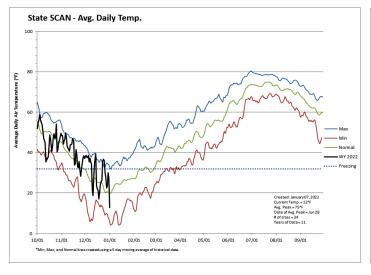
Statewide SCAN

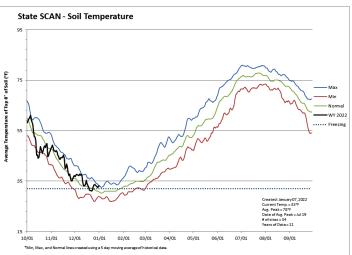
January 1, 2022

The average precipitation at SCAN sites within Utah was 1.4 inches in December, which brings the seasonal accumulation (Oct-Dec) to 3.6 inches. Soil moisture is at 39% compared to 25% last year.





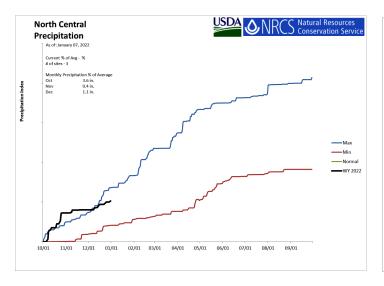


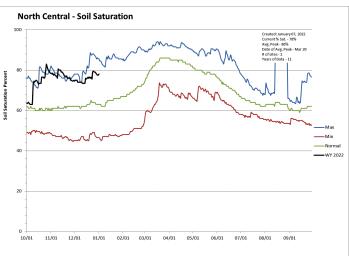


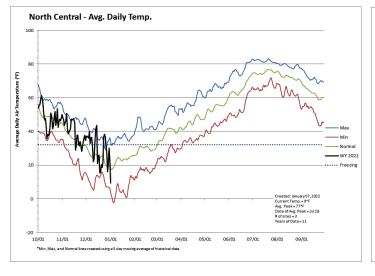
North Central

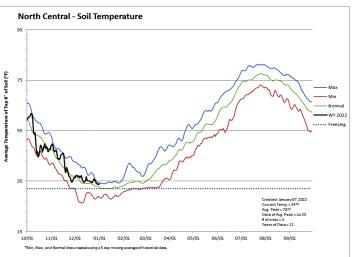
January 1, 2022

The average precipitation in December at SCAN sites within the basin was 1.1 inches, which brings the seasonal accumulation (Oct-Dec) to 5.1 inches. Soil moisture is at 78% compared to 59% last year.





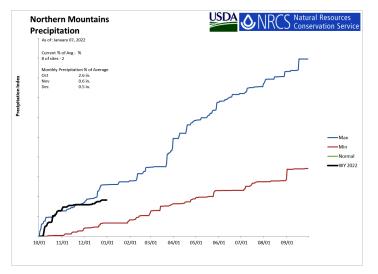


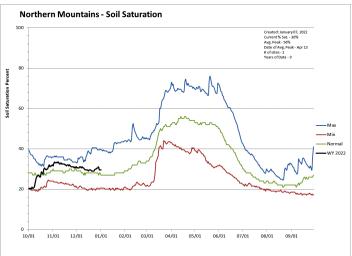


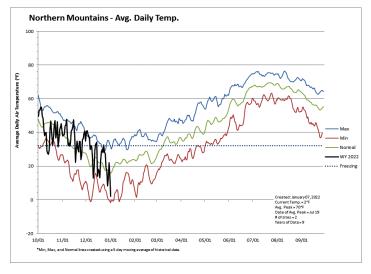
Northern Mountains

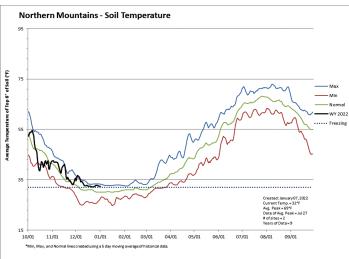
January 1, 2022

The average precipitation in December at SCAN sites within the basin was 0.5 inches, which brings the seasonal accumulation (Oct-Dec) to 3.7 inches. Soil moisture is at 30% compared to 18% last year.





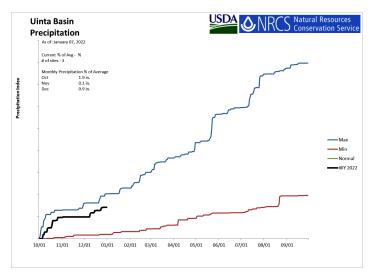


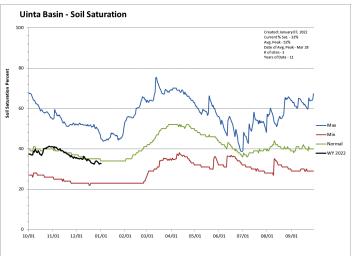


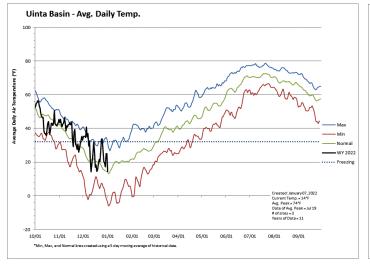
Uinta Basin

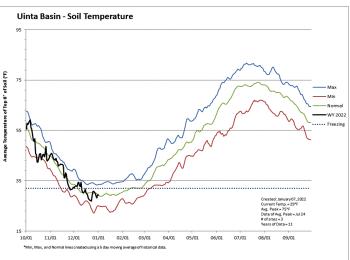
January 1, 2022

The average precipitation in December at SCAN sites within the basin was 0.9 inches, which brings the seasonal accumulation (Oct-Dec) to 2.9 inches. Soil moisture is at 33% compared to 26% last year.





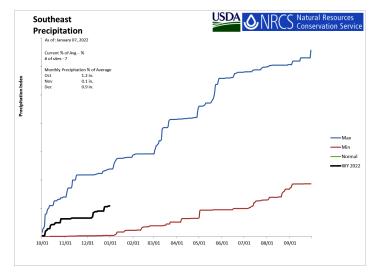


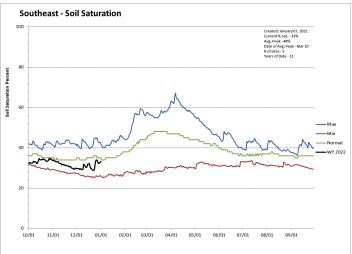


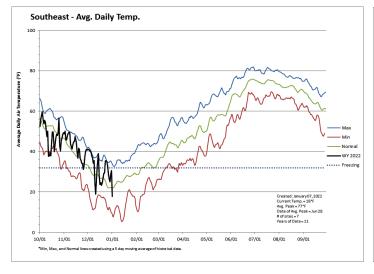
Southeast

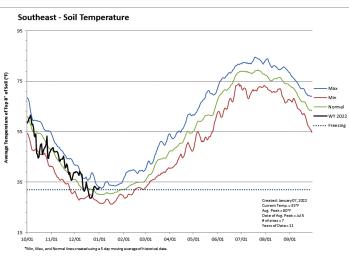
January 1, 2022

The average precipitation in December at SCAN sites within the basin was 0.9 inches, which brings the seasonal accumulation (Oct-Dec) to 2.2 inches. Soil moisture is at 33% compared to 28% last year.





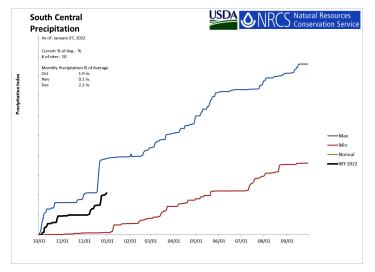


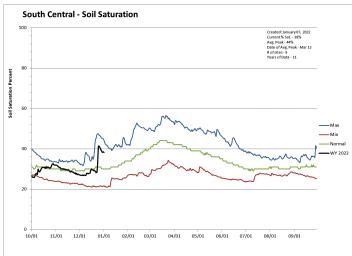


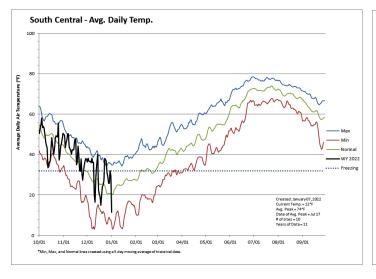
South Central

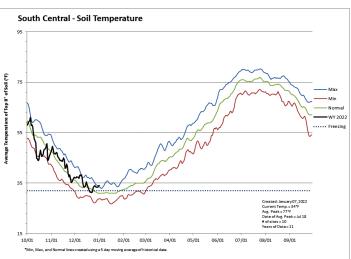
January 1, 2022

The average precipitation in December at SCAN sites within the basin was 2.2 inches, which brings the seasonal accumulation (Oct-Dec) to 4.2 inches. Soil moisture is at 39% compared to 21% last year.





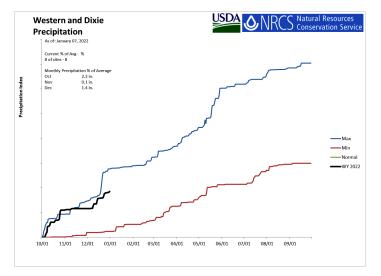


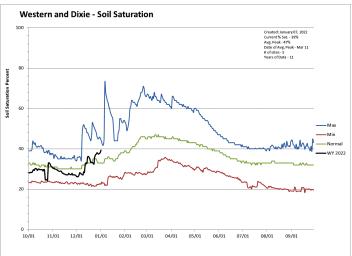


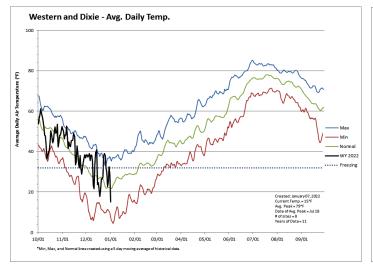
Western and Dixie

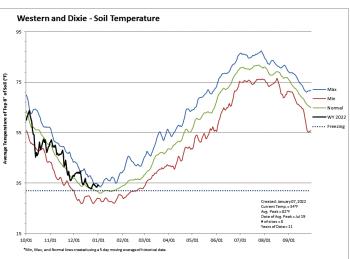
January 1, 2022

The average precipitation in December at SCAN sites within the basin was 1.4 inches, which brings the seasonal accumulation (Oct-Dec) to 3.7 inches. Soil moisture is at 32% compared to 16% last year.





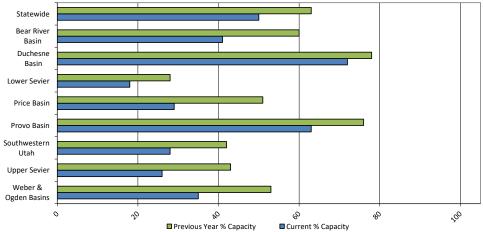




Reservoir Storage Summary for the end of December 2022	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)	Current % Capacity	Last Year % Capacity	Average % Capacity	Current % Average	Last Year % Average
Big Sand Wash Reservoir	13.1	9.0		25.7	51%	35%			
Causey Reservoir	4.0	3.6	3.6	7.1	57%	50%	51%	112%	99%
Cleveland Lake	0.0	1.0		5.4	0%	18%			
Currant Creek Reservoir	14.9	15.0	14.8	15.5	96%	97%	95%	101%	101%
Deer Creek Reservoir	107.7	106.3	109.1	149.7	72%	71%		99%	97%
East Canyon Reservoir	25.3	30.0	32.0	49.5	51%	61%		79%	94%
Echo Reservoir	20.1	21.2	38.8	73.9	27%	29%	53%	52%	55%
Grantsville Reservoir	1.8	1.4	1.4	3.3	54%	42%	42%	127%	101%
Gunlock	4.5	4.7	6.3	10.4	43%	45%		71%	74%
Gunnison Reservoir	0.0	0.0	5.6	20.3	0%	0%	28%	0%	0%
Huntington North Reservoir	2.1	2.5	2.4	4.2	50%	61%	57%	88%	106%
Hyrum Reservoir	8.6	9.7	9.9	15.3	56%	63%		87%	98%
Joes Valley Reservoir	21.2	38.0	37.5	61.6	34%	62%	61%	56%	101%
Jordanelle Reservoir	158.8	217.5	197.3	314.0	51%	69%	63%	80%	110%
Ken's Lake	0.9	0.5	1.0	2.3	40%	21%		92%	48%
Kolob Reservoir	3.0	3.4		5.6	54%	60%			
Lost Creek Reservoir	9.4	14.5	11.8	22.5	42%	64%	52%	80%	123%
Lower Enterprise	0.8	0.1	0.6	2.6	32%	2%		131%	9%
Miller Flat Reservoir	1.5	2.3		5.2	29%	45%			
Millsite	3.8	3.9	9.8	16.7	23%	23%	59%	39%	40%
Minersville Reservoir	4.1	5.4	9.4	23.3	17%	23%	40%	43%	58%
Moon Lake Reservoir	21.7	10.9	18.2	35.8	61%	30%	51%	119%	60%
Otter Creek Reservoir	16.7	22.5	27.9	52.5	32%	43%		60%	81%
Panguitch Lake	4.5	14.2	11.0	22.3	20%	64%	49%	41%	130%
Pineview Reservoir	23.4	50.1	51.9	110.1	21%	45%	47%	45%	96%
Piute Reservoir	16.7	25.9	35.3	71.8	23%	36%	49%	47%	73%
Porcupine Reservoir	4.4	6.4	7.1	11.3	39%	57%	63%	62%	90%
Quail Creek	24.1	23.9	27.2	40.0	60%	60%	68%	89%	88%
Red Fleet Reservoir	9.9	15.4	17.2	25.7	39%	60%	67%	58%	90%
Rockport Reservoir	24.4	30.5	34.5	60.9	40%	50%	57%	71%	88%
Sand Hollow Reservoir	37.7	44.7		50.0	75%	89%			
Scofield Reservoir	16.3	31.4	24.2	65.8	25%	48%	37%	67%	130%
Settlement Canyon Reservoir	0.3	0.4	0.6	1.0	31%	42%	56%	55%	75%
Sevier Bridge Reservoir	41.8	66.0	110.1	236.0	18%	28%	47%	38%	60%
Smith And Morehouse Reservoir	6.9	2.4	4.2	8.1	85%	29%	52%	163%	57%
Starvation Reservoir	123.7	133.2	131.3	164.1	75%	81%	80%	94%	101%
Stateline Reservoir	5.1	3.6	5.3	12.0	43%	30%	44%	97%	68%
Steinaker Reservoir	7.9	5.5	16.5	33.4	24%	16%	49%	48%	33%
Strawberry Reservoir	812.2	919.4	807.8	1105.9	73%	83%	73%	101%	114%
Upper Enterprise	1.2	3.0	3.0	10.0	12%	30%	30%	42%	102%
Upper Stillwater Reservoir	27.7	8.7	10.5	32.5	85%	27%	32%	264%	83%
Utah Lake	467.1	609.6	629.9	870.9	54%	70%	72%	74%	97%
Willard Bay	77.5	135.1	128.4	215.0	36%	63%	60%	60%	105%
Woodruff Creek	1.7	2.3	2.0	4.0	44%	57%	50%	87%	115%
Woodruff Narrows Reservoir	12.0	25.1	28.4	57.3	21%	44%	50%	42%	89%
Meeks Cabin Reservoir	9.0	3.3	9.8	32.5	28%	10%	30%	92%	33%
Bear Lake	536.8	784.5	514.7	1302.0	41%	60%	40%	104%	152%
Basin-wide Total	2681.2	3407.8	3148.3	5373.1	50%	63%	59%	85%	108%

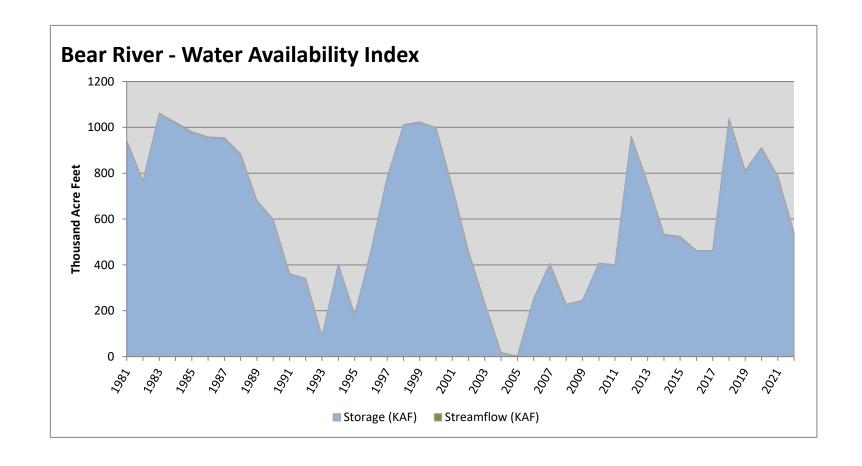
of reservoirs



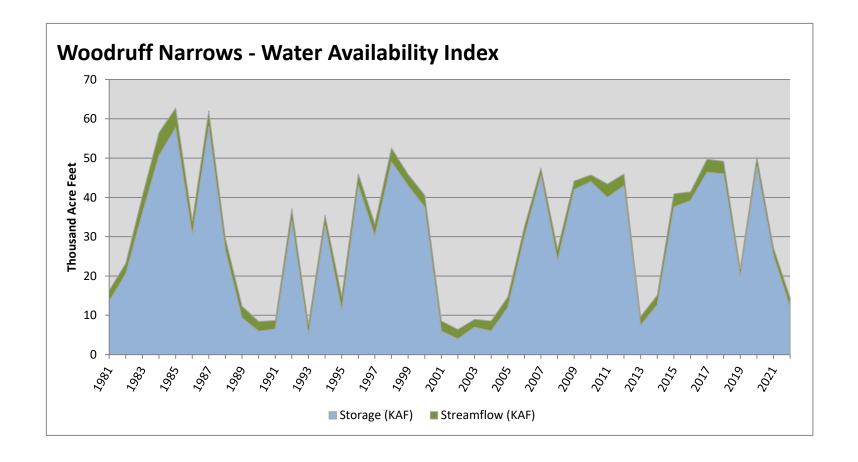


Water Availability Index

Basin or Region	Dec EOM [*] Storage	December Flow	Storage + Flow	Percentile	WAI [#]	Years with similiar WAI
	KAF [^]	KAF [^]	KAF^	%		
Bear River	536.84	2.40	539.24	49	-0.1	15, 14, 90, 89

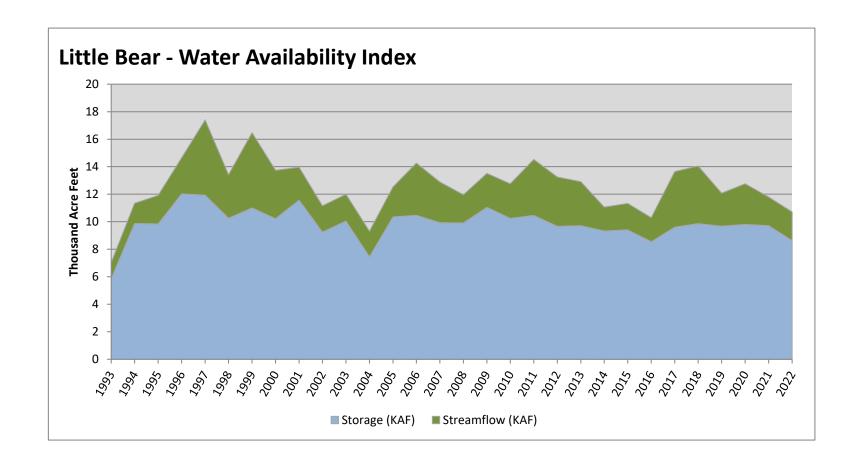


Basin or Region	Dec EOM [*] Storage	December Flow	Storage + Flow	Percentile	WAI [#]	Years with similiar WAI
	KAF [^]	KAF^	KAF [^]	%		
Woodruff Narrows	12.04	2.40	14.44	23	-2.23	13, 89, 05, 95

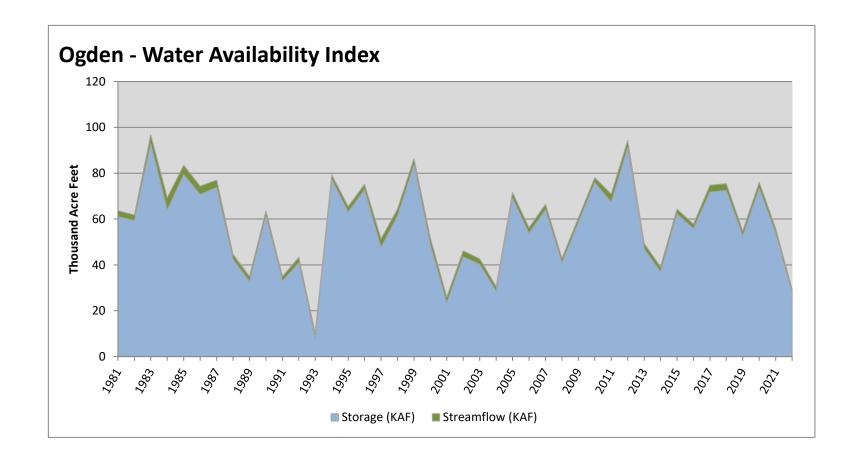


Water Availability Index

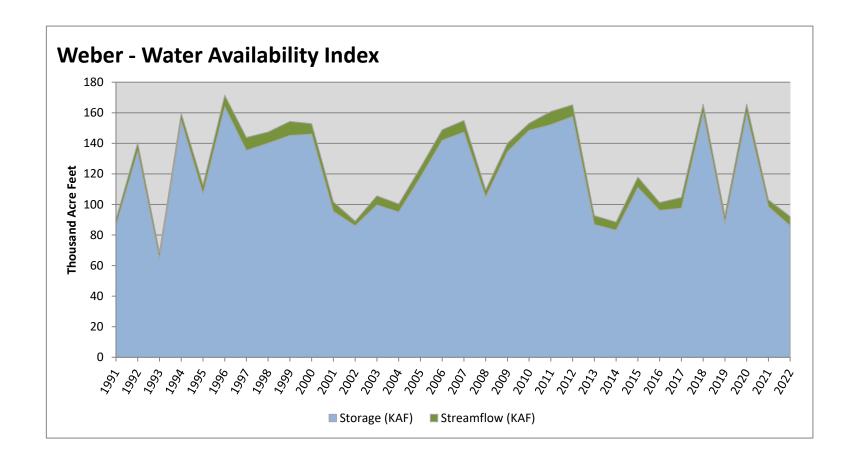
Basin or Region	Dec EOM [*] Storage	December Flow	Storage + Flow	Percentile	WAI [#]	Years with similiar WAI
	KAF [^]	KAF [^]	KAF	%		
Little Bear	8.63	2.08	10.71	13	-3.09	04, 16, 14, 02



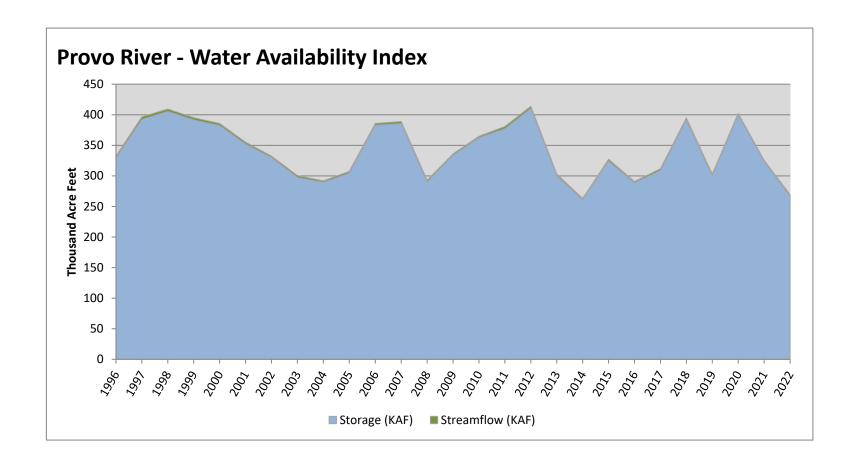
Basin or Region	Dec EOM [*] Storage	December Flow	Storage + Flow	Percentile	WAI [#]	Years with similiar WAI
	KAF [^]	KAF^	KAF [^]	%		
Ogden	27.42	1.98	29.40	7	-3.59	93, 01, 04, 91



Basin or Region	Dec EOM [*] Storage	December Flow	Storage + Flow	Percentile	$WAI^{\#}$	Years with similiar WAI
	KAF [^]	KAF [^]	KAF [^]	%		
Weber	86.01	6.08	92.09	15	-2.9	02, 91, 13, 19

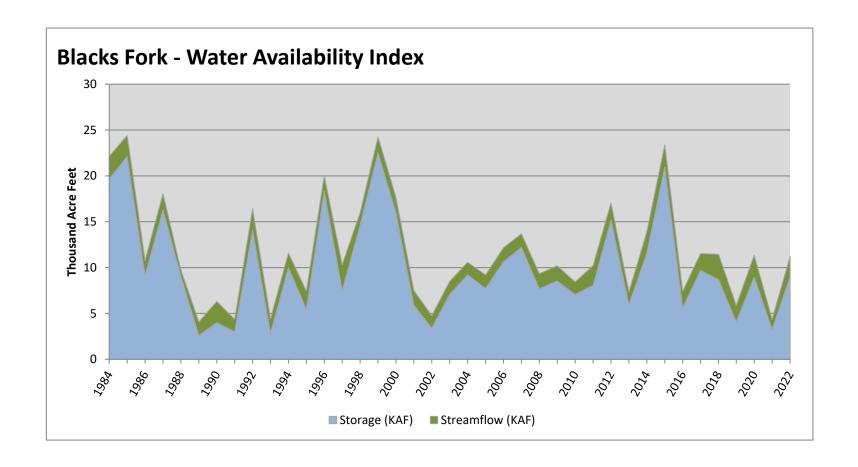


Basin or Region	Dec EOM [*] Storage	December Flow	Storage + Flow	Percentile	WAI [#]	Years with similiar WAI
	KAF [^]	KAF [^]	KAF [^]	%		
Provo River	266.49	2.90	269.39	7	-3.57	14, 16, 04, 08



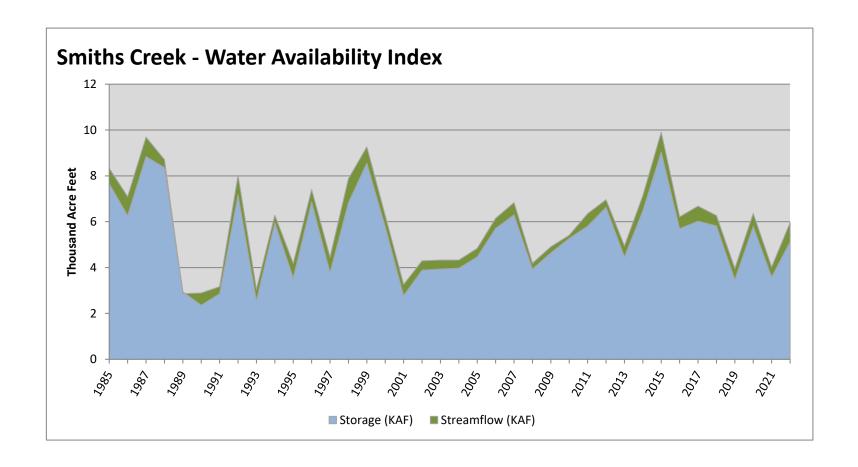
Water Availability Index

Basin or Region	Dec EOM [*] Storage	December Flow	Storage + Flow	Percentile	WAI [#]	Years with similiar WAI
	KAF [^]	KAF [^]	KAF	%		
Blacks Fork	9.03	2.19	11.22	55	0.42	04, 86, 20, 18

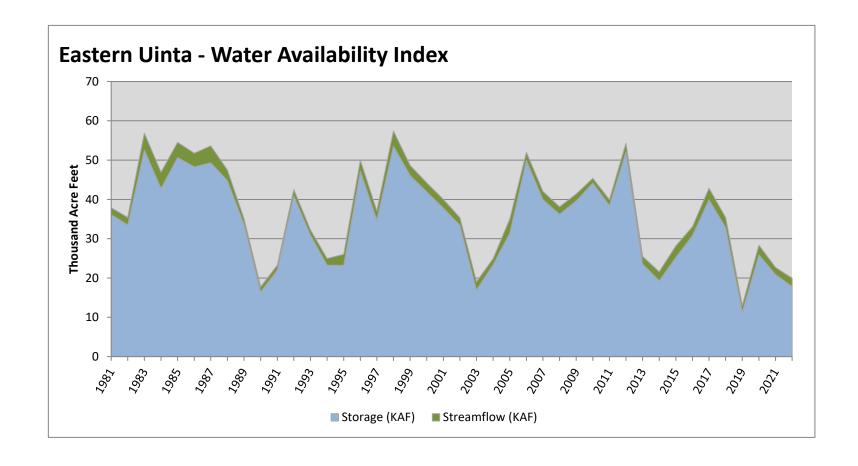


Water Availability Index

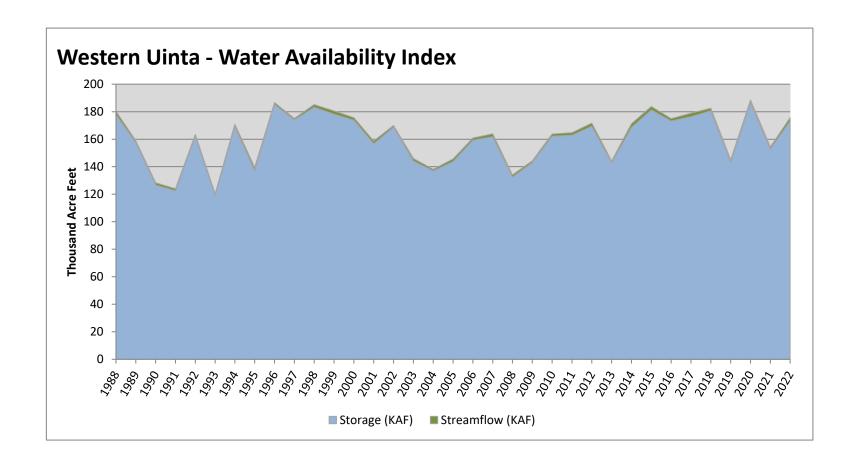
Basin or Region	Dec EOM [*] Storage	December Flow	Storage + Flow	Percentile	WAI [#]	Years with similiar WAI
	KAF [^]	KAF [^]	KAF	%		
Smiths Creek	5.12	0.84	5.96	46	-0.32	13, 10, 06, 16



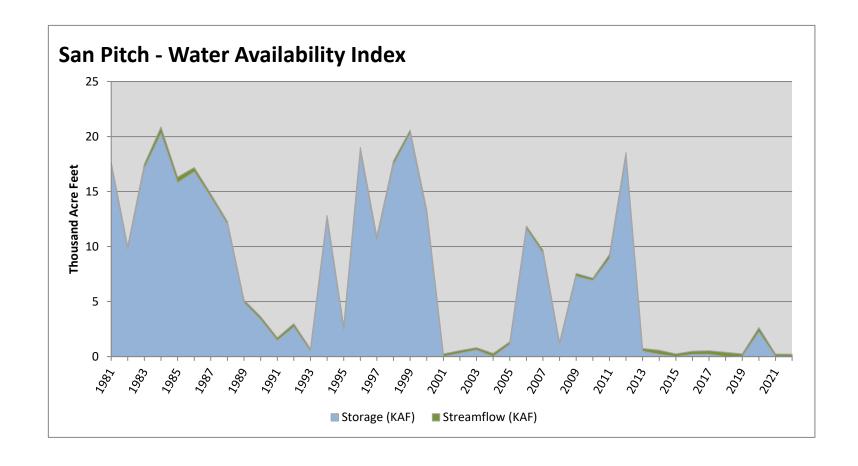
Basin or Region	Dec EOM [*] Storage	December Flow	Storage + Flow	Percentile	WAI [#]	Years with similiar WAI
	KAF [^]	KAF [^]	KAF [^]	%		
Eastern Uinta	17.84	2.11	19.95	9	-3.39	90, 03, 14, 21



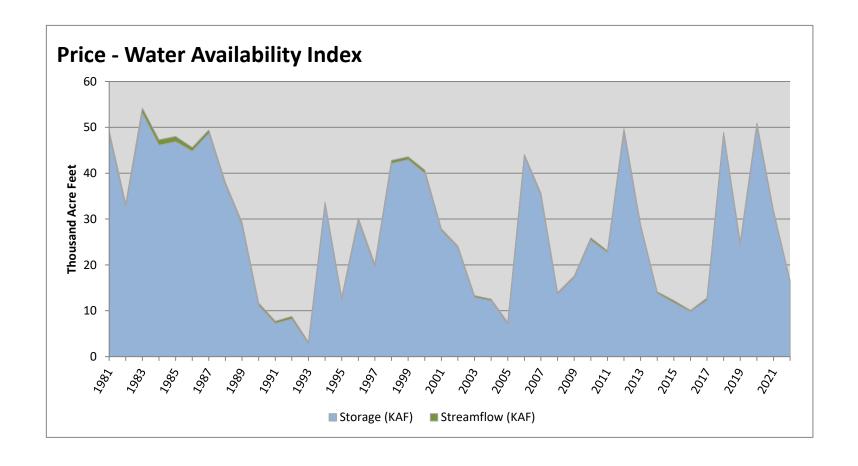
Basin or Region	Dec EOM [*] Storage	December Flow	Storage + Flow	Percentile	WAI [#]	Years with similiar WAI
	KAF [^]	KAF [^]	KAF [^]	%		
Western Uinta	173.07	2.52	175.59	72	1.85	16, 97, 00, 17



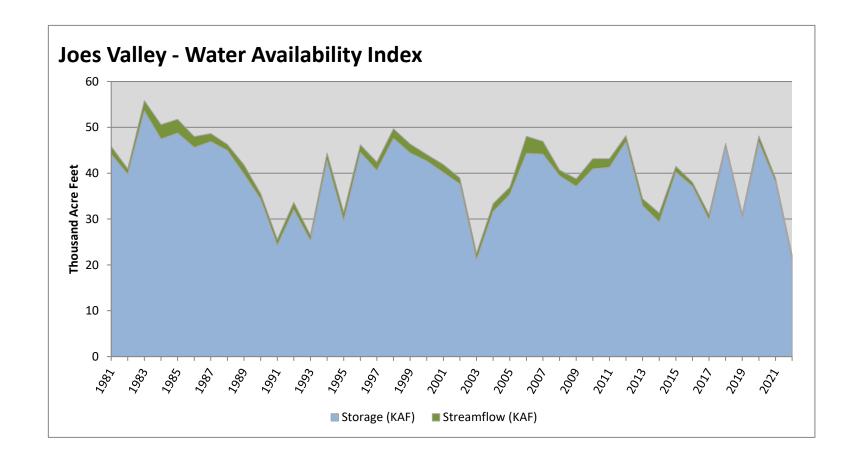
Basin or Region	Dec EOM [*] Storage	December Flow	Storage + Flow	Percentile	WAI [#]	Years with similiar WAI
	KAF [^]	KAF [^]	KAF [^]	%		
San Pitch	0.00	0.22	0.22	2	-3.97	21, 01, 15, 19



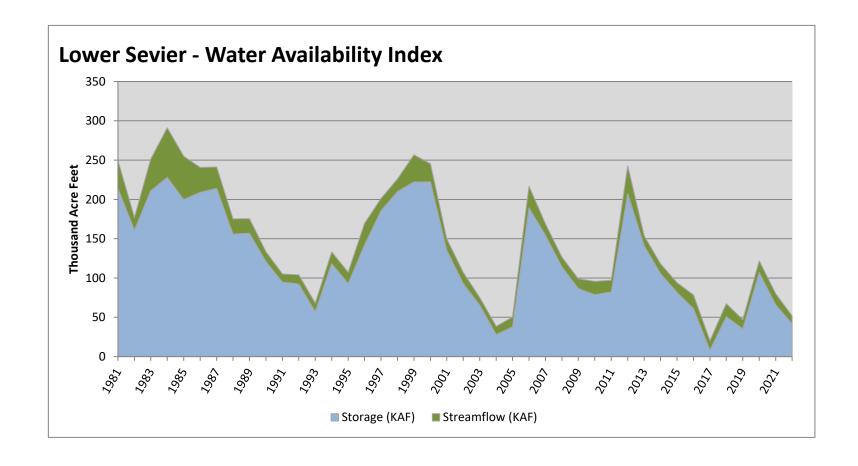
Basin or Region	Dec EOM [*] Storage	December Flow	Storage + Flow	Percentile	WAI [#]	Years with similiar WAI
	KAF [^]	KAF^	KAF [^]	%		
Price	16.33	0.21	16.54	33	-1.45	08, 14, 09, 97



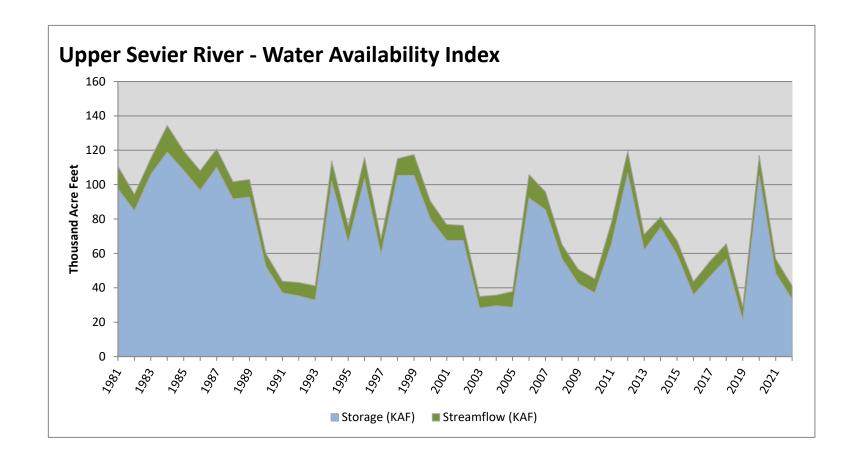
Basin or Region	Dec EOM [*] Storage	December Flow	Storage + Flow	Percentile	WAI [#]	Years with similiar WAI
	KAF [^]	KAF^	KAF [^]	%		
Joes Valley	21.17	0.96	22.13	2	-3.97	03, 91, 93, 17



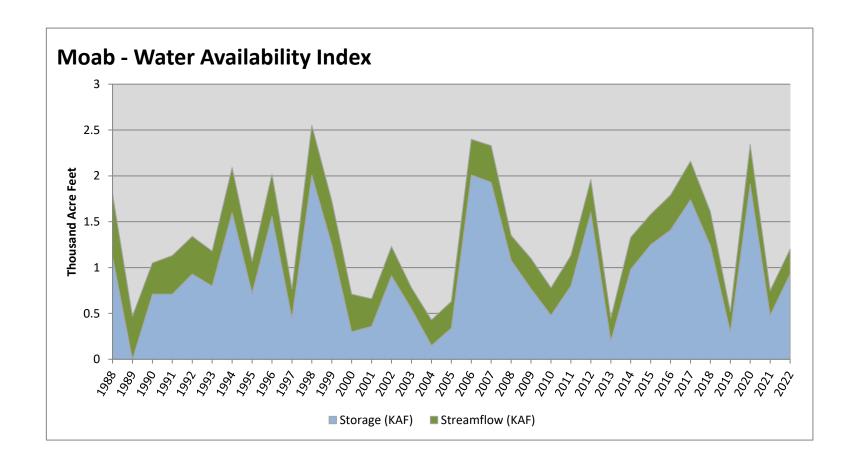
Basin or Region	Dec EOM [*] Storage	December Flow	Storage + Flow	Percentile	WAI [#]	Years with similiar WAI
	KAF [^]	KAF^	KAF [^]	%		
Lower Sevier	41.77	9.95	51.72	12	-3.2	19, 05, 18, 93



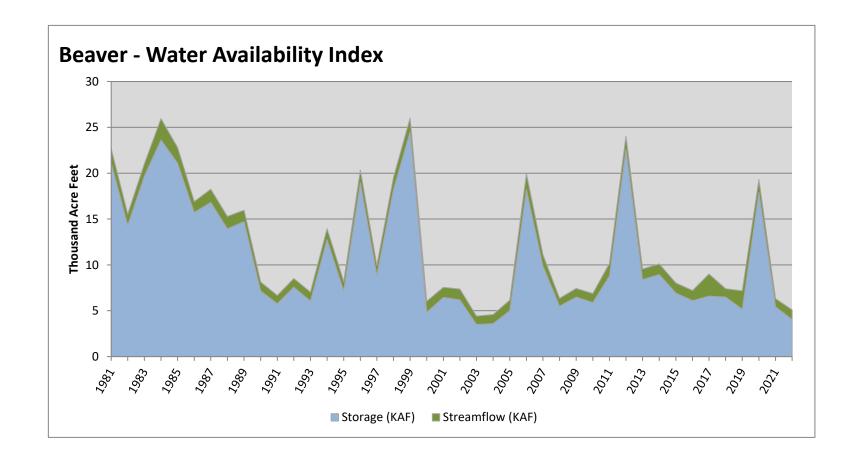
Basin or Region	Dec EOM [*] Storage	December Flow	Storage + Flow	Percentile	WAI [#]	Years with similiar WAI
	KAF [^]	KAF^	KAF [^]	%		
Upper Sevier River	33.42	7.75	41.17	12	-3.2	04, 05, 93, 92



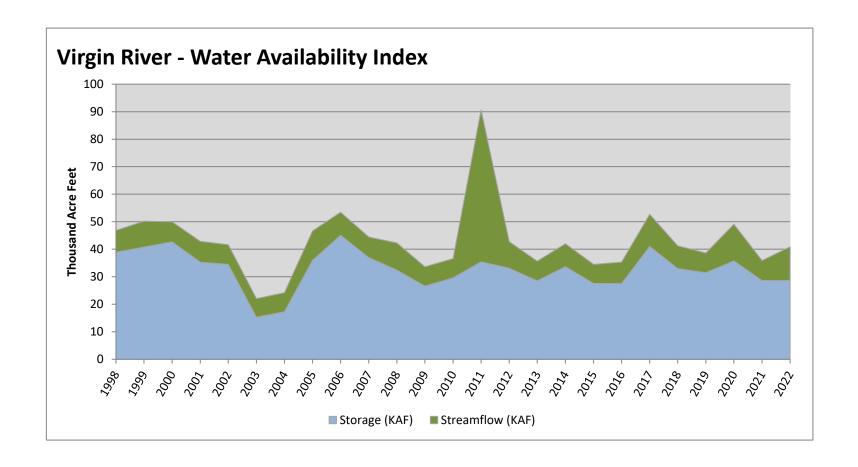
Basin or Region	Dec EOM [*] Storage	December Flow	Storage + Flow	Percentile	WAI [#]	Years with similiar WAI
	KAF [^]	KAF [^]	KAF [^]	%		
Moab	0.93	0.27	1.20	50	0	11, 93, 02, 14



Basin or Region	Dec EOM [*] Storage	December Flow	Storage + Flow	Percentile	WAI [#]	Years with similiar WAI
	KAF [^]	KAF^	KAF [^]	%		
Beaver	4.05	1.05	5.10	7	-3.59	03, 04, 00, 05



Basin or Region	Dec EOM [*] Storage	December Flow	Storage + Flow	Percentile	WAI [#]	Years with similiar WAI
	KAF [^]	KAF [^]	KAF [^]	%		
Virgin River	28.59	12.30	40.89	38	-0.96	10, 19, 18, 02



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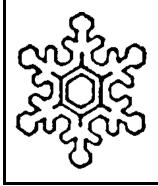


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Utah Climate and Water Report

Natural Resources Conservation Service Salt Lake City, UT

