Utah Climate and Water Report

October, 2010

Tule Valley SCAN site west of Delta, Utah

Photos by Karen Vaughan, USDA-NRCS

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.

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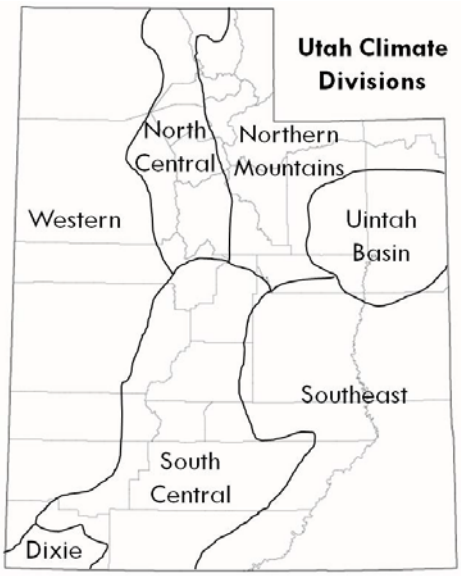
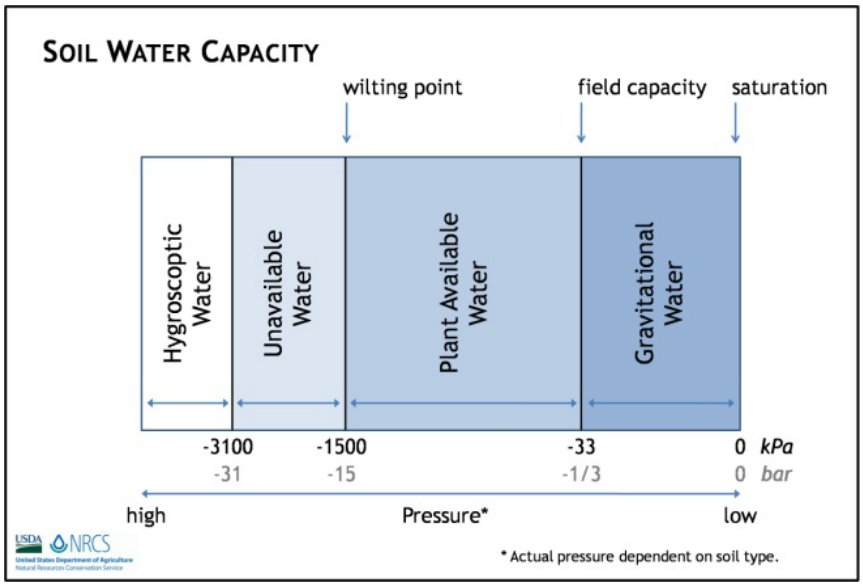
Climate and Water Information

Soil Climate Analysis Network

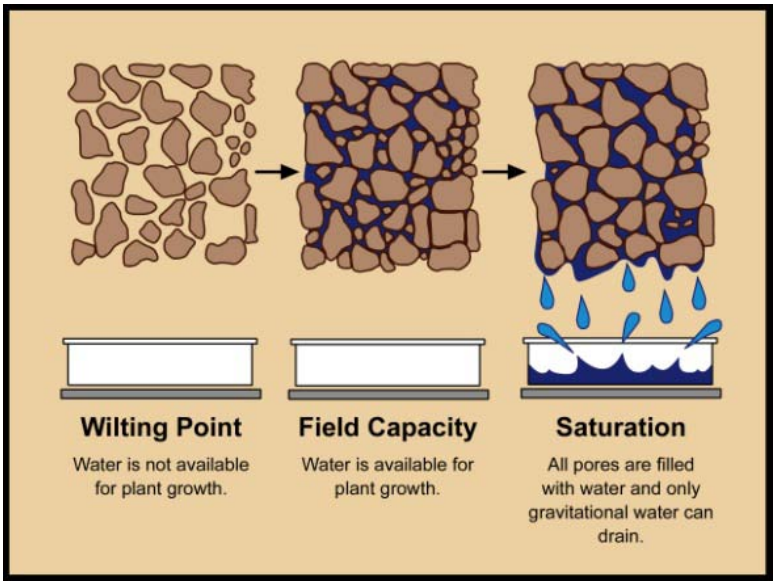
Soil Climate Analysis Network (SCAN) stations are primarily located on low- to mid-elevation, agriculturally important landscapes that maintain representative soils. Elevations range from 3,000 to 7,000 ft. The SCAN network provides real-time soil moisture and temperature data coupled with additional climate information for use in natural resource planning, drought assessment, water resource management, and resource inventory. Stations are situated on non-irrigated, native soils, are remotely located, and collect hourly atmospheric and soils data that are available to the public online.

In order to summarize SCAN data, the 35 sites in Utah are grouped by climate divisions (North Central, Northern Mountains, Uintah Basin, Southeast, South Central, Dixie, and Western).





Explanation of soil water capacity definitions. Field capacity (FC) and wilting point (WP) are calculated in the laboratory for each soil horizon. The amount of water held between field capacity and wilting point is plant available.

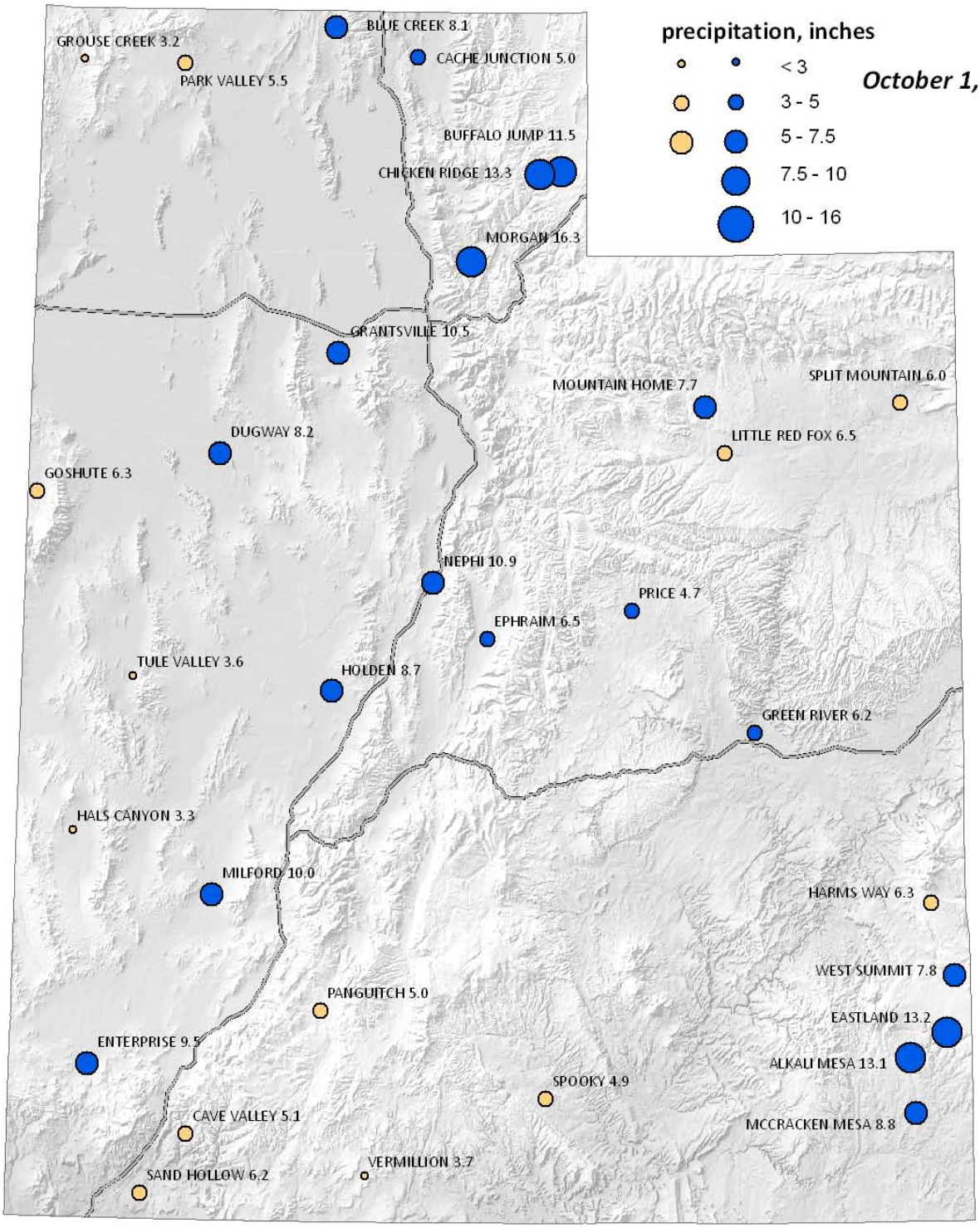


Visual explanation of soil water capacity definitions.

http://www.wcc.nrcs.usda.gov/scan/Utah/utah.html

updated Oct. 1, 2010

Utah SCAN Water Year Precipitation *



*since October 1, 2009 except new installations (ORANGE) at Park Valley 1/14/10; Goshute 3/1/10; Tule Valley 3/8/10; Hal's Canyon 3/9/10; Sand Hollow 1/27/10; Panguitch 1/25/10; Little Red Fox 1/20/10; Split Mountain 1/19/10; Harm's Way 3/3/10; Cave Valley 4/12/10; Vermillion 4/13/10; Spooky 4/14/10; Manderfield 4/16/10, and Grouse Creek 5/4/10. Data based on the first reading of the day.

Provisional Data Subject to Revision

Miles
0 12.5 25 50 75 100

Prepared by the USDA/NRCS Utah DCO
Salt Lake City, Utah
http://www.wcc.nrcs.usda.gov/scan/Utah/utah.html
Science contact: Karen Vaughan
(karen.vaughan@ut.usda.gov)

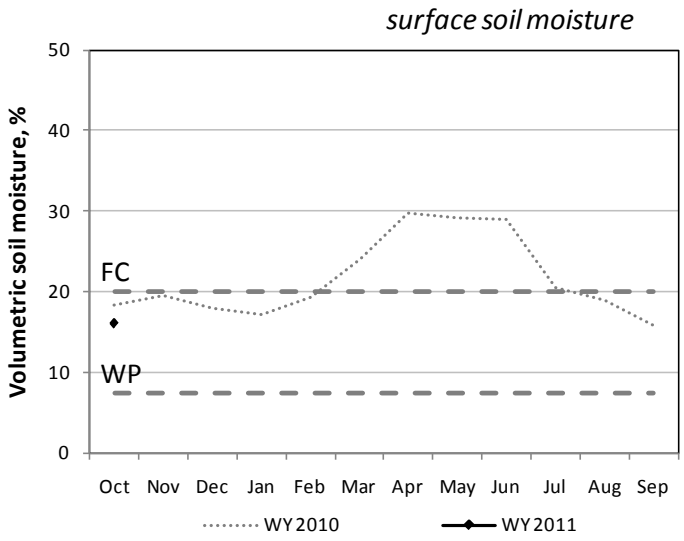
North Central

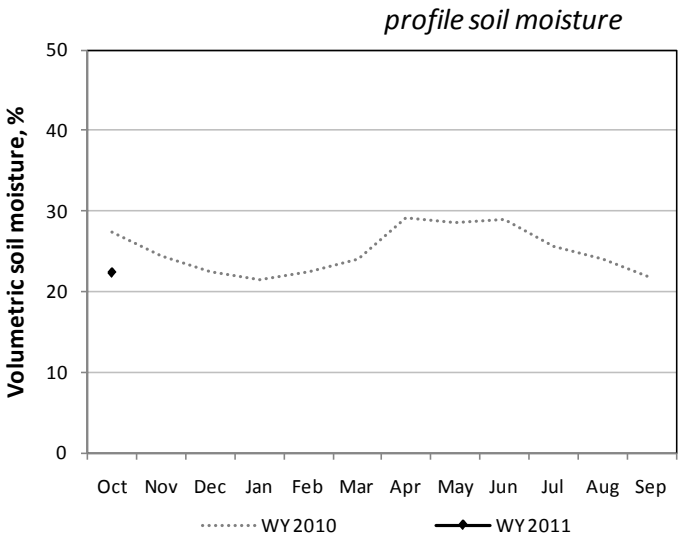
Soil Climate Analysis Network (SCAN)

Site name	County	Precip to Date*	Monthly Precip	Avg Air Temp	Soil Moisture					Soil Temperature				
					2"	4"	8"	20"	40"	2"	4"	8"	20"	40"
		in.	*in.*	*°F*	*volume %*					*°F*				
NORTH CENTRAL														
Blue Creek	*Box Elder*	8.1	0.09	68	8	13	21	25	22	65	69	69	66	63
Cache Junction	*Cache*	5.0	0.27	59	10	18	25	25	28	61	63	62	61	60
Grantsville	*Tooele*	10.5	0.05	66	1	5	24	26	25	62	68	69	68	69

*since October 1, 2009. Monthly Precip is the amount of precipitation accumulated in the past month and Avg Air Temp is the average air temperature measured at the SCAN station. Soil moisture and temperature values reflect conditions measured on the first of the month.

North Central





Surface soil moisture is the weighted mean of the water content measured at depths of 2, 4, and 8 inches. **FC** is the mean field capacity, **WP** is the mean permanent wilting point for the soil surface (0 to 12 inches) at SCAN sites within the region, and **WY** is the water year lasting October through September. *Profile soil moisture* is the weighted mean of water content measured at depths of 2, 4, 8, 20, and 40 inches.

Additional data available at the SCAN website, including: hourly air temperature, relative humidity, wind speed, wind direction, barometric pressure, precipitation, solar radiation, soil temperature, and soil moisture.

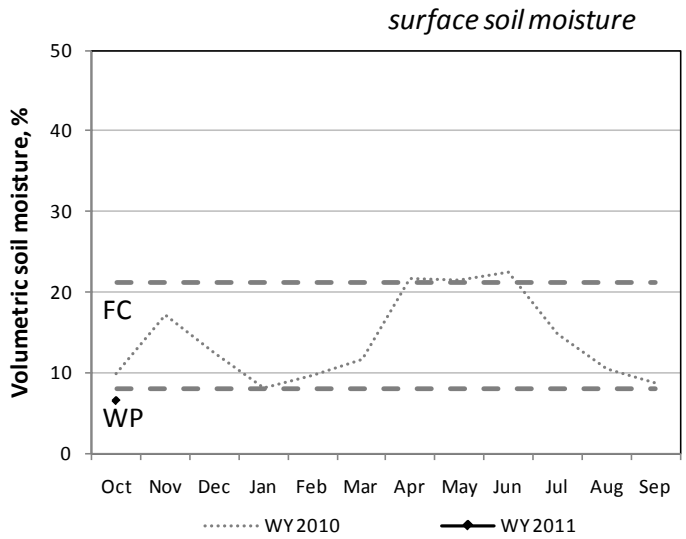
Northern Mountains

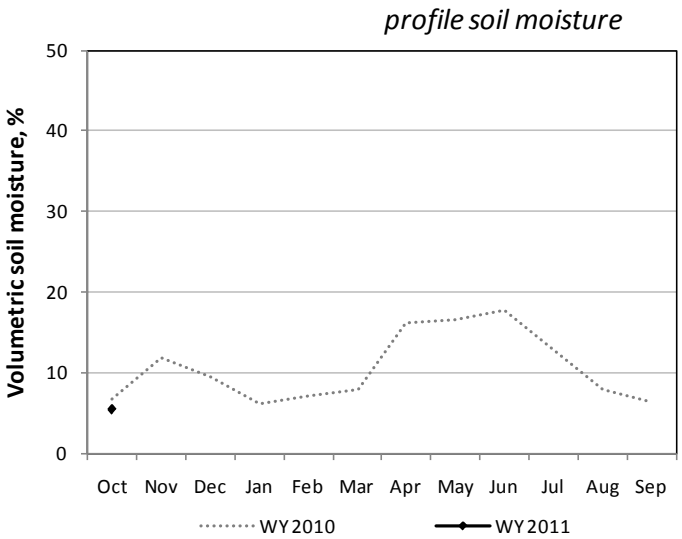
Soil Climate Analysis Network (SCAN)

Site name	County	Precip to Date*	Monthly Precip	Avg Air Temp	Soil Moisture					Soil Temperature				
					2"	4"	8"	20"	40"	2"	4"	8"	20"	40"
		in.	*in.*	*°F*	*volume %*					*°F*				
NORTHERN MOUNTAINS														
Chicken Ridge	*Morgan*	13.3	0.47	64	0	0	6	3	8	58	58	58	59	61
Buffalo Jump	*Rich*	11.5	0.29	62	5	9	11	9	-	63	65	64	60	-
Morgan	*Morgan*	16.3	0.56	58	3	7	10	5	5	61	60	63	61	60

*since October 1, 2009. Monthly Precip is the amount of precipitation accumulated in the past month and Avg Air Temp is the average air temperature measured at the SCAN station. Soil moisture and temperature values reflect conditions measured on the first of the month.

Northern Mountains





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Additional data available at the SCAN website, including: hourly air temperature, relative humidity, wind speed, wind direction, barometric pressure, precipitation, solar radiation, soil temperature, and soil moisture.

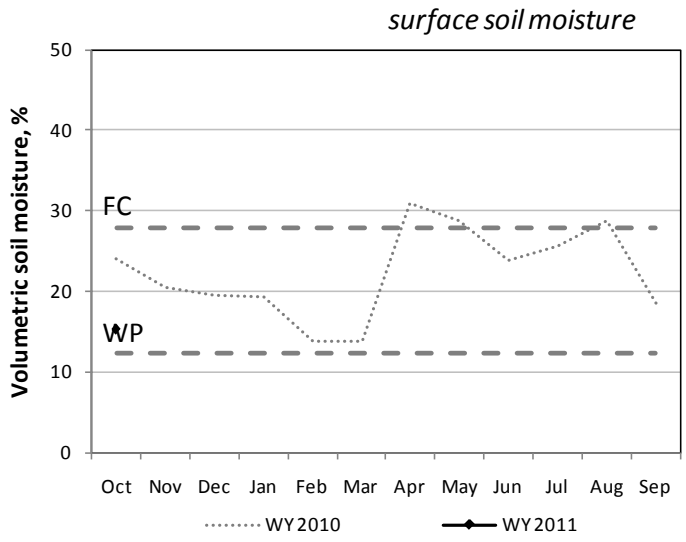
Uintah Basin

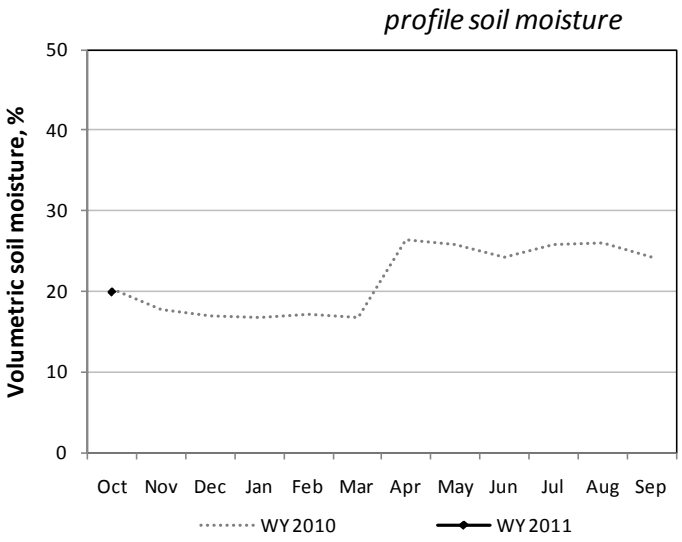
Soil Climate Analysis Network (SCAN)

Site name	County	Precip to Date*	Monthly Precip	Avg Air Temp	Soil Moisture					Soil Temperature				
					2"	4"	8"	20"	40"	2"	4"	8"	20"	40"
		in.	*in.*	*°F*	*volume %*					*°F*				
UINTAH BASIN														
Mountain Home	*Duchesne*	7.7	0.03	65	14	21	23	20	12	56	57	57	55	55
Little Red Fox	*Duchesne*	6.5	0.29	63	0	19	24	33	43	54	64	64	63	62
Split Mountain	*Uintah*	6.1	0.07	63	1	12	11	12	12	61	65	71	67	66

*since October 1, 2009 unless underlined (Little Red Fox 1/20/10; Split Mountain 1/19/10). Monthly Precip is the amount of precipitation accumulated in the past month and Avg Air Temp is the average air temperature measured at the SCAN station. Soil moisture and temperature values reflect conditions measured on the first of the month.

Uintah Basin





Surface soil moisture is the weighted mean of the water content measured at depths of 2, 4, and 8 inches. **FC** is the mean field capacity, **WP** is the mean permanent wilting point for the soil surface (0 to 12 inches) at SCAN sites within the region, and **WY** is the water year lasting October through September. *Profile soil moisture* is the weighted mean of water content measured at depths of 2, 4, 8, 20, and 40 inches.

Additional data available at the SCAN website, including: hourly air temperature, relative humidity, wind speed, wind direction, barometric pressure, precipitation, solar radiation, soil temperature, and soil moisture.

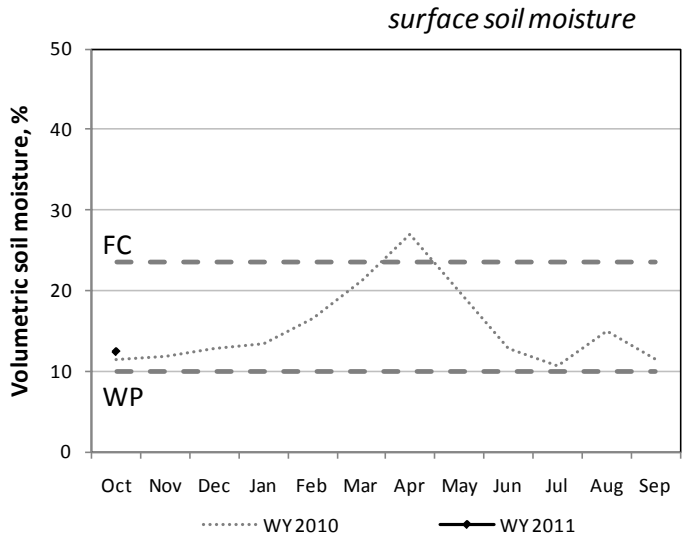
Southeast

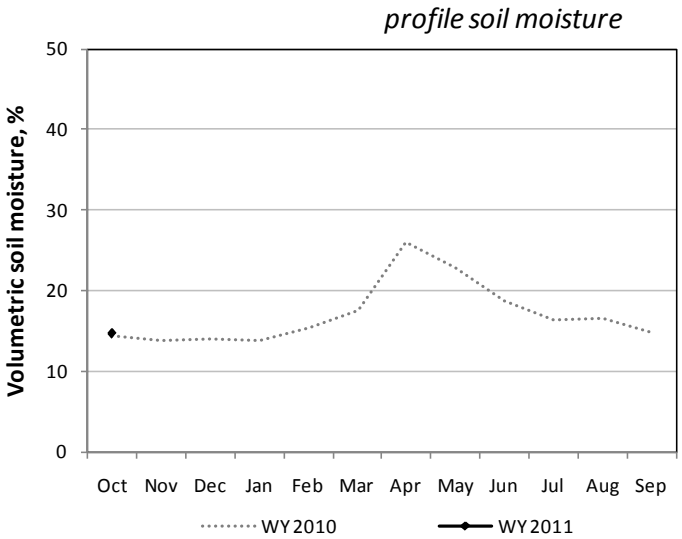
Soil Climate Analysis Network (SCAN)

Site name	County	Precip to Date*	Monthly Precip	Avg Air Temp	Soil Moisture					Soil Temperature				
					2"	4"	8"	20"	40"	2"	4"	8"	20"	40"
		in.	*in.*	*°F*	*volume %*					*°F*				
SOUTHEAST														
Price	*Carbon*	4.7	0.01	72	1	6	12	17	20	71	76	76	71	69
Green River	*Emery*	6.2	0.64	64	10	10	8	5	10	65	68	72	71	71
Harm's Way	*San Juan*	6.4	0.82	66	11	0	15	16	7	68	64	69	66	63
West Summit	*San Juan*	7.8	0.71	67	13	17	14	16	20	58	59	63	61	62
Eastland	*San Juan*	13.2	1.78	66	16	16	9	23	22	61	64	63	62	61
Alkali Mesa	*San Juan*	13.1	2.41	74	16	16	16	19	14	63	64	66	66	65
McCracken Mesa	*San Juan*	8.8	1.26	71	16	21	15	17	14	70	72	73	70	70

*since October 1, 2009 unless underlined (Harm's Way 3/3/10). Monthly Precip is the amount of precipitation accumulated in the past month and Avg Air Temp is the average air temperature measured at the SCAN station. Soil moisture and temperature values reflect conditions measured on the first of the month.

Southeast





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Additional data available at the SCAN website, including: hourly air temperature, relative humidity, wind speed, wind direction, barometric pressure, precipitation, solar radiation, soil temperature, and soil moisture.

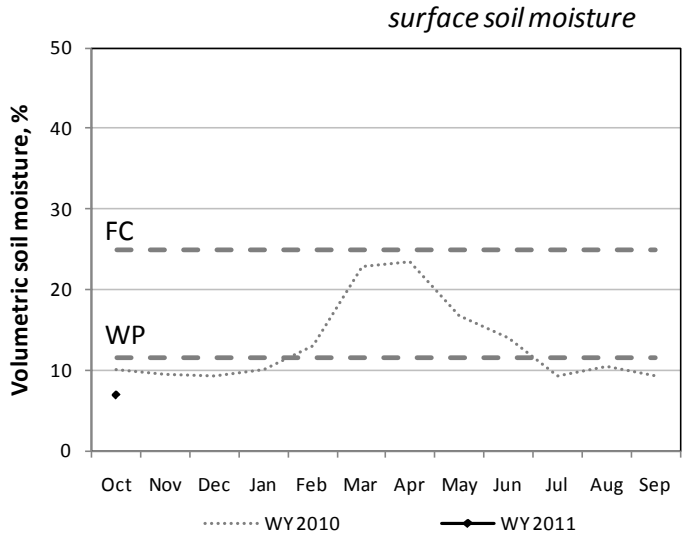
South Central

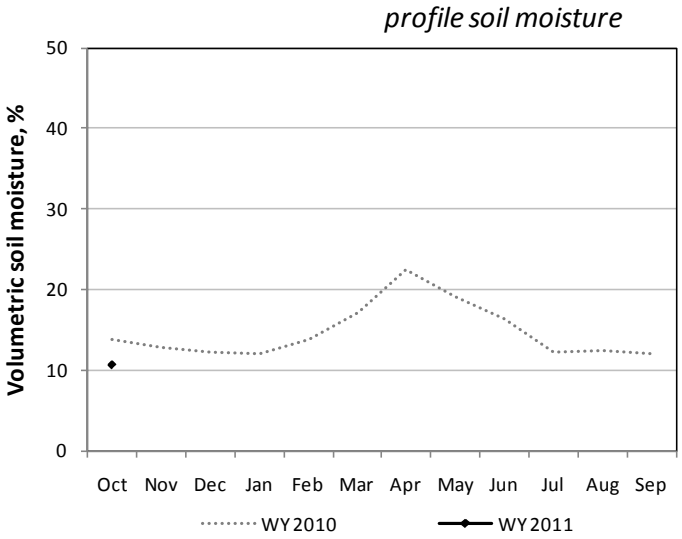
Soil Climate Analysis Network (SCAN)

Site name	County	Precip to Date*	Monthly Precip	Avg Air Temp	Soil Moisture					Soil Temperature				
					2"	4"	8"	20"	40"	2"	4"	8"	20"	40"
		in.	*in.*	*°F*	*volume %*					*°F*				
SOUTH CENTRAL														
Nephi	*Juab*	10.9	0.02	65	6	13	13	8	1	68	70	70	68	66
Ephraim	*Sanpete*	6.5	0.05	58	1	6	14	15	25	55	64	64	61	61
Holden	*Millard*	8.7	0.00	63	2	3	4	11	13	68	69	69	68	68
Milford	*Beaver*	10.0	0.25	61	8	18	15	27	17	66	67	65	64	64
Manderfield	*Beaver*	2.4	0.00	61	1	9	12	11	5	59	66	65	64	62
Circleville	*Piute*	nd	nd	57	24	16	23	12	13	55	56	55	55	56
Panguitch	*Garfield*	5.0	0.01	54	6	18	14	21	34	52	58	57	56	56
Cave Valley	*Washington*	5.1	0.05	67	0	0	0	1	0	63	68	70	66	65
Vermillion	*Kane*	3.7	0.19	69	0	1	2	3	8	55	61	64	62	62
Spooky	*Kane*	4.9	0.07	72	2	0	3	19	4	72	71	72	70	69

*since October 1, 2009 unless underlined (Panguitch 1/25/10; Cave Valley 4/12/10; Vermillion 4/13/10; Spooky 4/14/10; Manderfield 4/16/10), (*nd)* no data. Monthly Precip is the amount of precipitation accumulated in the past month and Avg Air Temp is the average air temperature measured at the SCAN station. Soil moisture and temperature values reflect conditions measured on the first of the month.

South Central





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Additional data available at the SCAN website, including: hourly air temperature, relative humidity, wind speed, wind direction, barometric pressure, precipitation, solar radiation, soil temperature, and soil moisture.

Western and Dixie

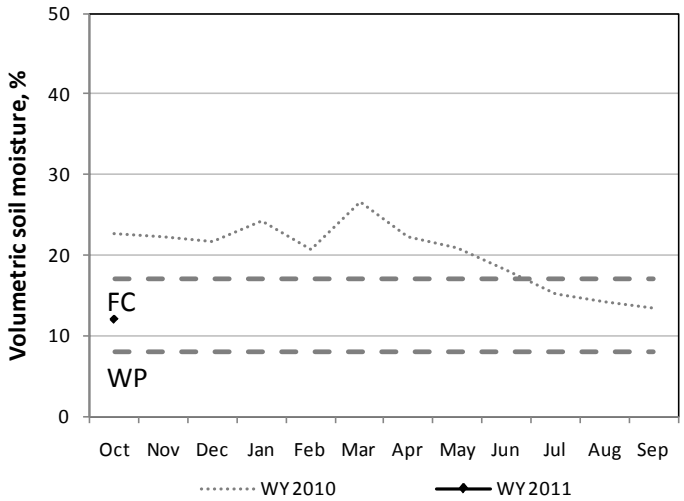
Soil Climate Analysis Network (SCAN)

Site name	County	Precip to Date*	Monthly Precip	Avg Air Temp	Soil Moisture					Soil Temperature				
					2"	4"	8"	20"	40"	2"	4"	8"	20"	40"
		in.	*in.*	*°F*	*volume %*					*°F*				
WESTERN														
Grouse Creek	*Box Elder*	3.2	0.33	66	1	6	11	17	17	58	66	67	63	62
Park Valley	*Box Elder*	5.5	0.34	68	0	1	11	24	26	60	66	69	67	65
Goshute	*Tooele*	6.3	0.13	62	5	19	17	37	33	55	62	66	64	64
Dugway	*Tooele*	8.2	0.00	64	26	34	40	nd	14	64	67	67	66	66
Tule Valley	*Millard*	3.6	0.00	70	4	7	22	12	8	64	73	77	75	74
Hal's Canyon	*Millard*	3.3	0.00	66	1	0	8	8	9	60	69	72	69	68
Enterprise	*Washington*	9.5	0.05	62	3	20	20	13	14	66	71	69	68	67
DIXIE														
Sand Hollow	*Washington*	6.2	0.04	79	0	0	0	0	1	65	79	84	79	77

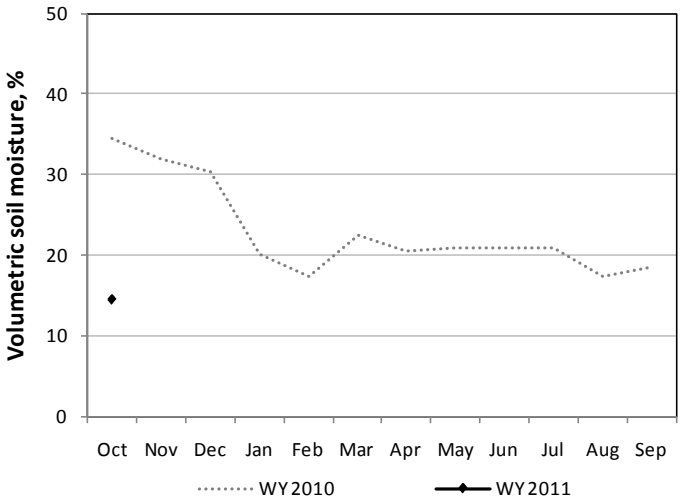
*since October 1, 2009 unless underlined (Park Valley 1/14/10; Goshute 3/1/10; Tule Valley 3/8/10; Hal's Canyon 3/9/10; Sand Hollow 1/27/10; Grouse Creek 5/4/10), (nd) no data. Monthly Precip is the amount of precipitation accumulated in the past month and Avg Air Temp is the average air temperature measured at the SCAN station. Soil moisture and temperature values reflect conditions measured on the first of the month.

Western & Dixie

surface soil moisture



profile soil moisture



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Additional data available at the SCAN website, including: hourly air temperature, relative humidity, wind speed, wind direction, barometric pressure, precipitation, solar radiation, soil temperature, and soil moisture.

2010 Minimum Soil Temperatures at Utah SCAN sites

Minimum soil temperatures and number of days less than or equal to 32°F.

Site Name	2-inch min. temp °F	2-inch # days	4-inch min. temp °F	4-inch # days	8-inch min. temp °F	8-inch # days	20-inch min. temp °F	20-inch # days	40-inch min. temp °F	40-inch # days
Alkali Mesa	23	34	22	45	29	5	34	0	36	0
Blue Creek	20	64	24	26	26	22	33	0	38	0
Buffalo Jump	19	125	24	121	26	113	31	68	R	
Cache Junction	22	83	24	54	27	50	34	0	38	0
Chicken Ridge	23	133	26	102	26	92	33	0	35	0
Circleville	19	82	21	96	21	127	29	29	37	0
Dugway	15	56	21	39	26	28	35	0	37	0
Eastland	28	38	31	23	32	0	34	0	36	0
Enterprise	23	52	29	32	30	27	34	0	40	0
Ephraim	18	105	26	56	30	6	35	0	38	0
Grantsville	22	65	27	42	32	7	38	0	46	0
Green River	15	99	16	94	21	89	27	44	35	0
Holden	26	27	27	29	29	21	33	0	41	0
Lightning Ridge	32	12	34	0	33	0	33	0	35	0
Little Red Fox	28	43	29	44	30	41	33	0	36	0
McCracken Mesa	26	55	31	8	33	0	36	0	40	0
Milford	22	43	27	26	29	11	36	0	42	0
Morgan	24	80	26	82	27	56	32	1	34	0
Mountain Home	25	27	28	19	30	11	34	0	38	0
Nephi	24	34	27	22	30	6	36	0	39	0
Panguitch	25	53	28	35	29	29	33	0	38	0
Price	15	79	21	71	25	50	32	0	37	0
Sand Hollow	33	0	36	0	40	0	43	0	46	0
Split Mountain	18	53	20	52	23	51	28	41	34	0
West Summit	20	53	22	55	28	6	33	0	36	0

min. temp, minimum temperature recorded; #, number of days less than or equal to 32°F; R, bedrock; site installation not complete in time to calculate 2010 frost depth at Harm's Way, Goshute, Hal's Canyon, Tule Valley, Vermillion, Cave Valley, Grouse Creek, Spooky, Manderfield, and Park Valley.

General Hydrologic Conditions

The data and analyses in this section are from the NRCS SNOTEL system (precipitation, soil moisture), US Geological Survey (streamflow) and from various sources of reservoir data including the Bureau of Reclamation, Water Conservancy Districts and NRCS. These analyses provide information on general hydrologic conditions at higher water producing elevations.

What is a Water Availability Index?

The Water Availability Index (WAI) is a 'snapshot in time' indicator of total surface water availability within a watershed for current reservoir storage and the immediate past month's streamflow set in a historical context. The WAI is very similar to the Surface Water Supply Index (SWSI) except the SWSI incorporates a predictive parameter – forecast streamflow for the runoff season, April-July in combination with reservoir storage. Due to its predictive component, the SWSI is primarily used as a planning tool whereas the WAI is used as a continuous monitoring tool giving a numerical rating of current water supply. The Water Availability index is calculated by combining observed reservoir storage (carryover) with observed runoff for the past month. 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 as a PERCENT CHANCE OF NON-EXCEEDANCE. While this is a cumbersome name, it has a simple 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 year's 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 far more intuitive for most people and is totally 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.

Utah Hydrologic Summary and Preliminary Outlook

October 1, 2010

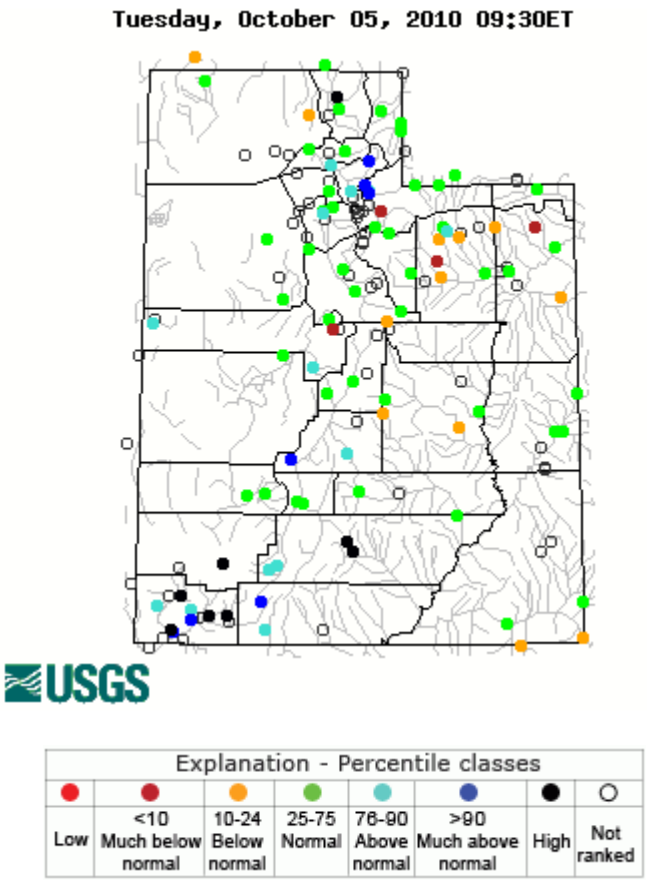
Water Year 2010 Summary

Water year 2010 took some interesting twists and turns as is typical for Utah Climate. The water year started off with a large snow event in early October then turned dry. By January, snowpacks in northern Utah ranged from 54% on the Bear to 72% over the Uintah Basin. Southern and southeastern Utah were doing extremely well, up to 135% of average. Soil Moisture over much of the state and particularly in southern Utah was extremely dry. By April (the normal peak of snowpack accumulation) these conditions had solidified with much below average snowpack conditions in northern Utah (55%-70%) and average to well above average snowpacks in southern Utah (92%-150%). Soil moisture conditions were uniformly dry across the state and some loss of snowpacks to the soil was anticipated. Reservoir storage was in excellent shape at 71% of capacity, up 5% from the previous year. Forecast streamflows ranged from 17% on the Bear River to 152% on the Sevier – dry conditions in the north and wetter conditions in the south. April brought some phenomenal storms to northern Utah – nearly 1/3 of the year's snowpack in northern Utah came in a couple of April storms. Cooler temperatures reduced the normal melt and concentrated it into a shorter time frame which helped increase runoff to some extent.

Current Conditions

Soil moisture across the state had begun to rebound from summer lows in late August and early September but a generally very dry and extremely warm September has them on a downward plunge and they are currently as dry or dryer than last year and previous years. The positive note is that we are currently experiencing substantial rainfall which will likely continue for the next several days which should bring soil moisture conditions up from their current extremely dry condition. Reservoir storage is at 59% of capacity, down 3% from last year. However, last year we had an extremely wet spring which delayed irrigation for nearly 6 weeks and the net result was less water used with more carryover in the fall. Current reservoir storage is more typical of normal conditions and at 59%, which should be adequate carryover for the year. The basins with the lowest current storage are: Bear River – 32% and Sevier River – 22% of capacity. Water Availability Indexes (total of observed reservoir storage and streamflow) range from 8% on the Sevier to 52% on the Weber. Many Water Availability Indexes are below average for this time of year.

Current Utah Streamflow - Courtesy US Geological Survey

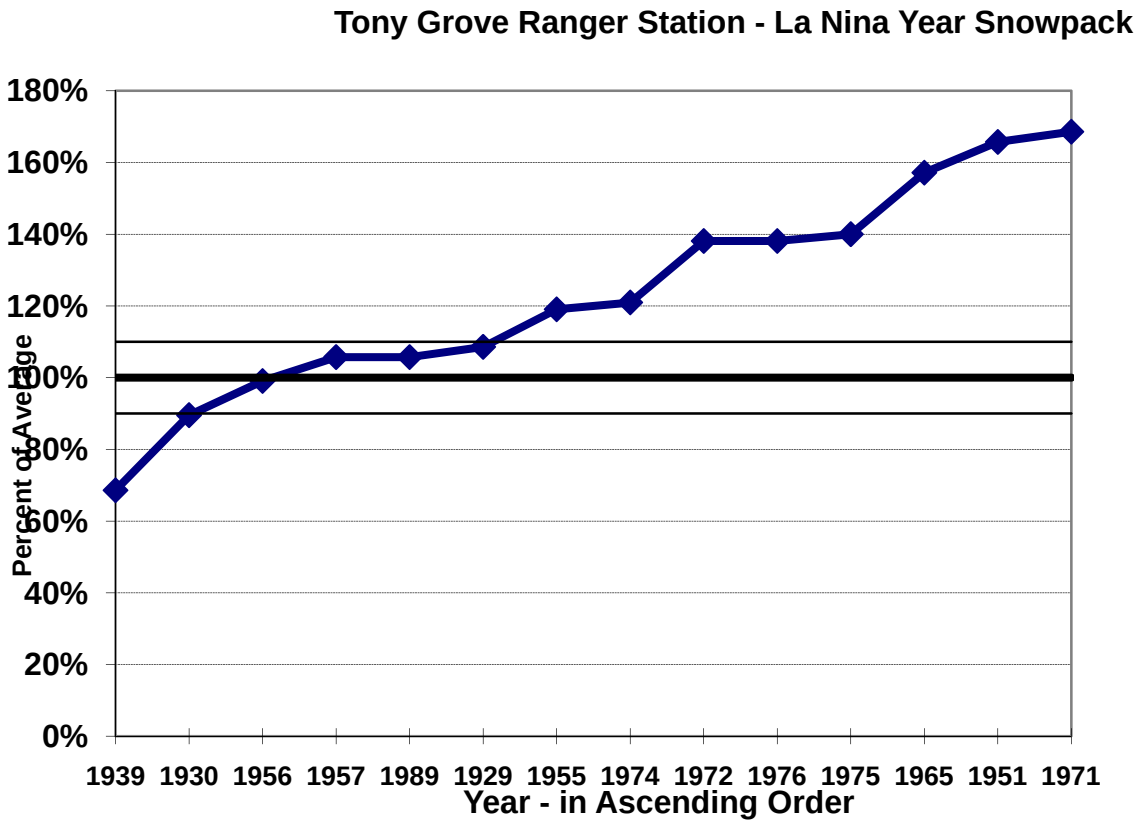


Streamflow conditions across much of the state are near normal. Above and much above average conditions in southwestern Utah reflect short term precipitation patterns and not the longer term base flow more indicative of water supply conditions of the area. Many of these streamflow points have significant reservoir and diversion management impacts and may not reflect base flow, both above and below normal conditions. However, in a general sense, streamflow across the state is predominantly in the normal category.

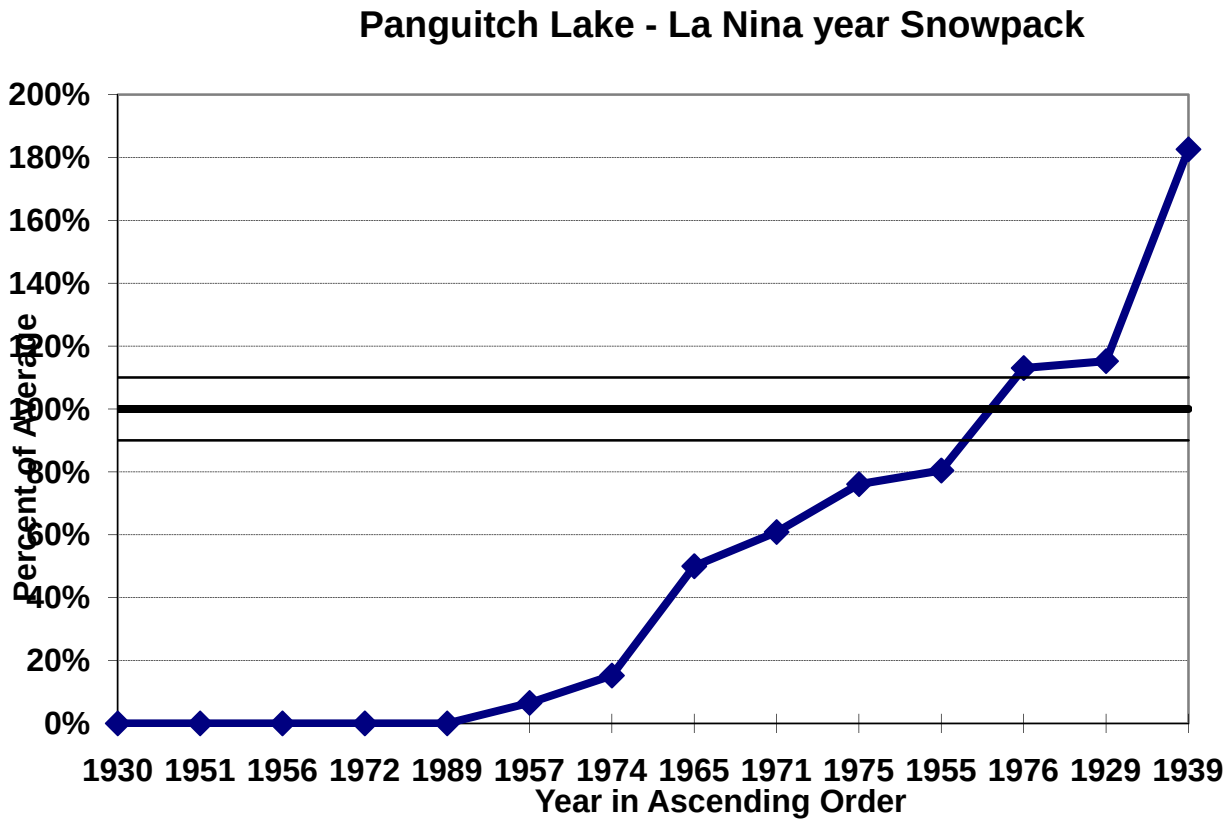
Hydrologic Outlook for Water Year 2011

There is a great deal of uncertainty in any projection of future conditions. That said, there are some indicators that give preliminary but valuable insight to what is most likely. Soil moisture conditions while currently very dry will likely improve to some degree in the next few weeks. Once covered in snowpack, they are more or less static till snowmelt begins in spring. The change or lack thereof in current soil moisture conditions will be one of the critical factors in determining overall hydrologic conditions for the 2011 runoff season. We hope for a substantial improvement over the next few weeks. Reservoir storage

should start to increase with the termination of the irrigation season. Natural unmanaged streamflows will likely remain in near normal conditions from now until spring allowing reservoir managers to steadily increase reservoir storage over the winter period. Climatological conditions are presently defined by a “La Nina” phase of Southern Oscillation Index, currently at a strength of -1 degree C. La Nina conditions typically mean a dry winter in southern Utah and average or potentially above average conditions for northern Utah as illustrated in the following graphs.

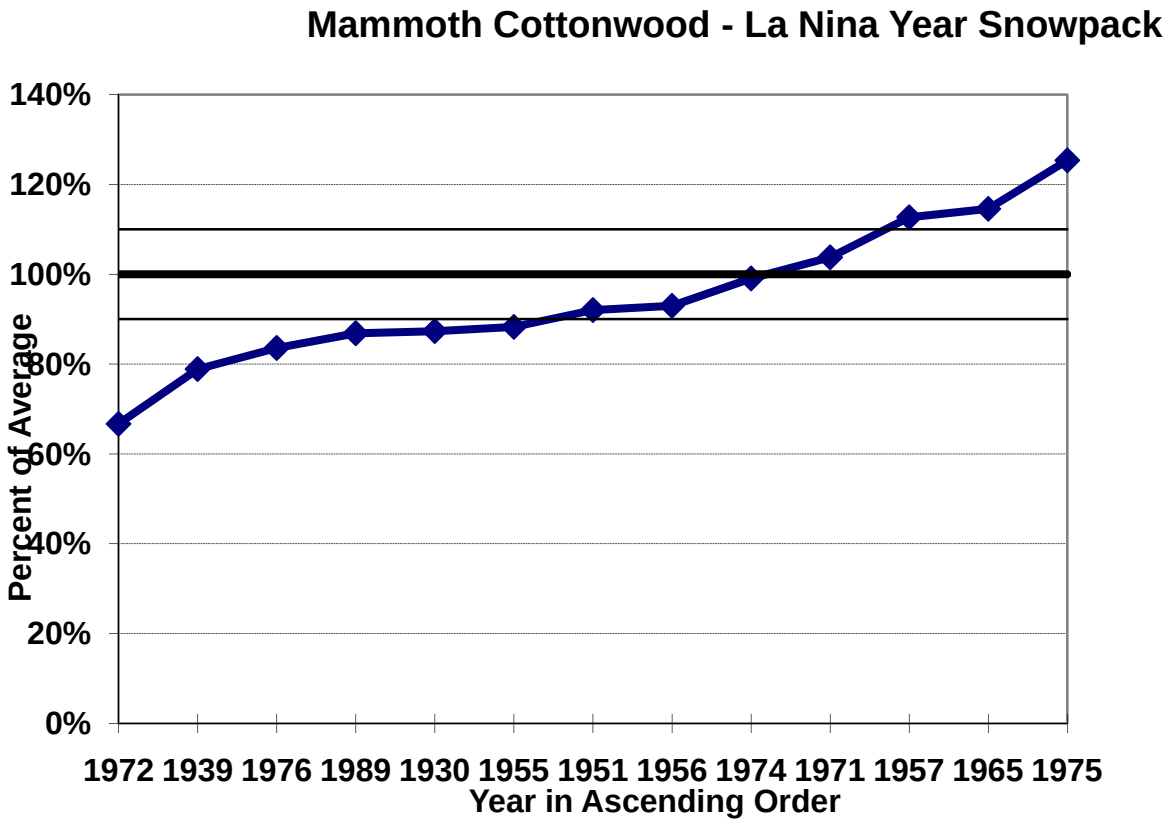


At Tony Grove Ranger Station (in northern Utah) of the 14 La Nina years analyzed, 13 were categorized as average (90%-100%) or above. Six of these 14 years, (43% of the time) were in the much above average category of 140% or greater. Only one year, 1939 had below average snowpack conditions on April 1. While not a perfect indication, this analysis gives a very high confidence that given La Nina conditions, April 1 snowpack conditions in Logan Canyon and Northern Utah are very likely to be at least average and potentially much above average this coming snow season. On the other hand, southern Utah is just as likely to have extremely poor snowpack conditions as illustrated in the following graph.



At Panguitch Lake (in southern Utah) – of the 14 years analyzed, just over 1/3 are zero snowpack on April 1. Only 3 are average or above. Interestingly, one of those years, 1939 is extremely high which corresponds to the lowest La Nina year in northern Utah indicating again that this is not a perfect index and that climate can have much different outcomes in any conditions. However, about 80% of the time, below average snowpack conditions will be the result of La Nina conditions in southern Utah and about 35% of the time, the results will be extreme drought.

Thus, based on these analyses, early projections indicate that water managers in southern Utah should prepare for a poor runoff season and make appropriate decisions in water storage throughout the winter season. Water Managers in Northern Utah can reasonably expect to have at least an average runoff season and manage accordingly. That leaves central Utah and what to expect there. In any year of such striking delineation there has to be a transition zone between and central Utah is that zone. This is illustrated by the following graph.

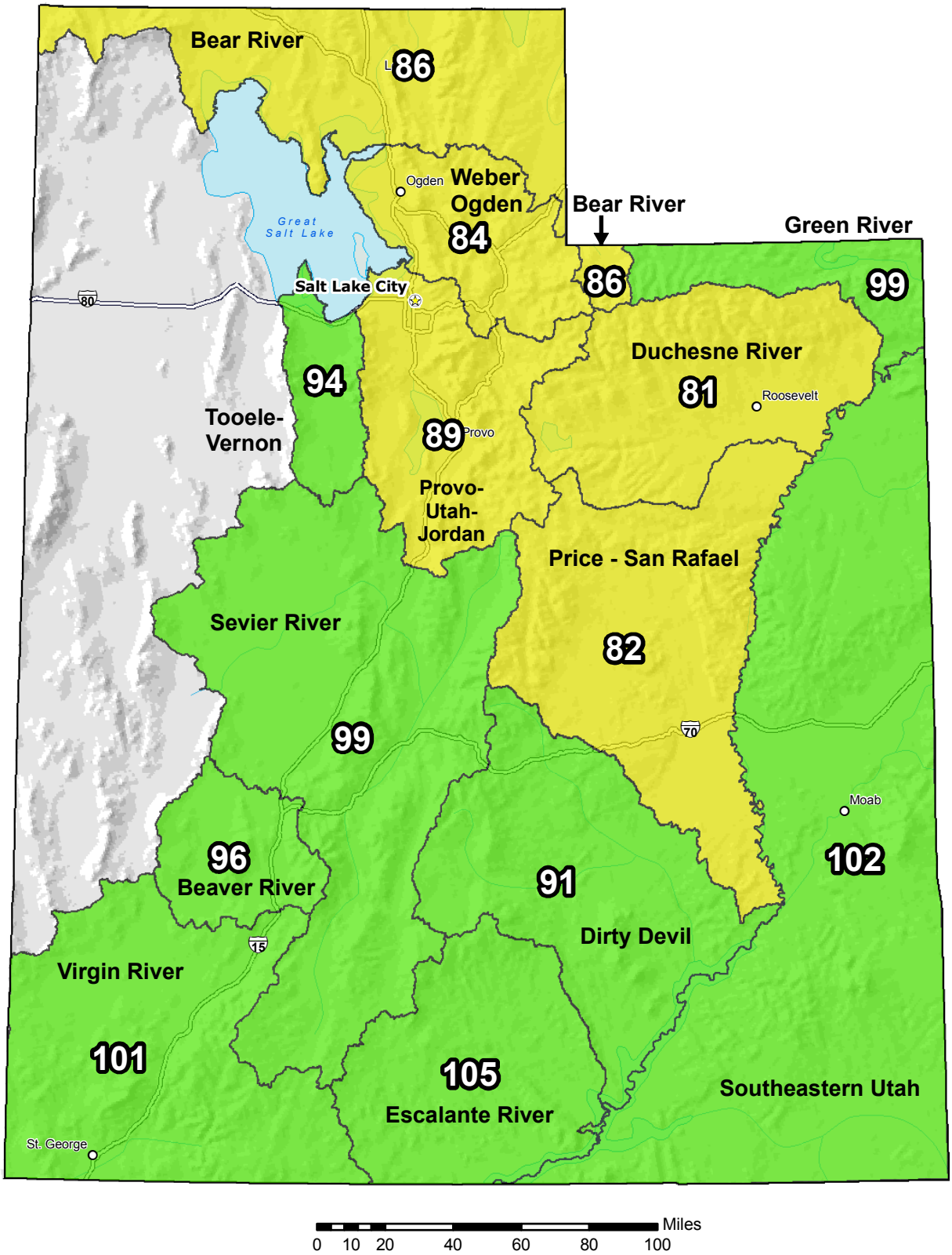


At the Mammoth Cottonwood snow site, which is located near the top of Fairview Canyon in central Utah, one can see that transition effect – some years are below, some above and many near normal. So, central Utah is a toss up with little predictability.

As always, current snowpack, precipitation, soil moisture, water supply and reservoir information can be found at: http://www.ut.nrcs.usda.gov/snow/

Utah
SNOTEL Water Year (Oct 1) to Date Precipitation
% of Normal

Sep 30, 2010



Water Year (Oct 1) to Date Precipitation Basin-wide Percent of 1971-2000 Normal

- unavailable *
- <50%
- 50 - 69%
- 70 - 89%
- 90 - 109%
- 110 - 129%
- 130 - 149%
- >=150%

* *Data unavailable at time of posting or measurement is not representative at this time of year*

Provisional Data Subject to Revision

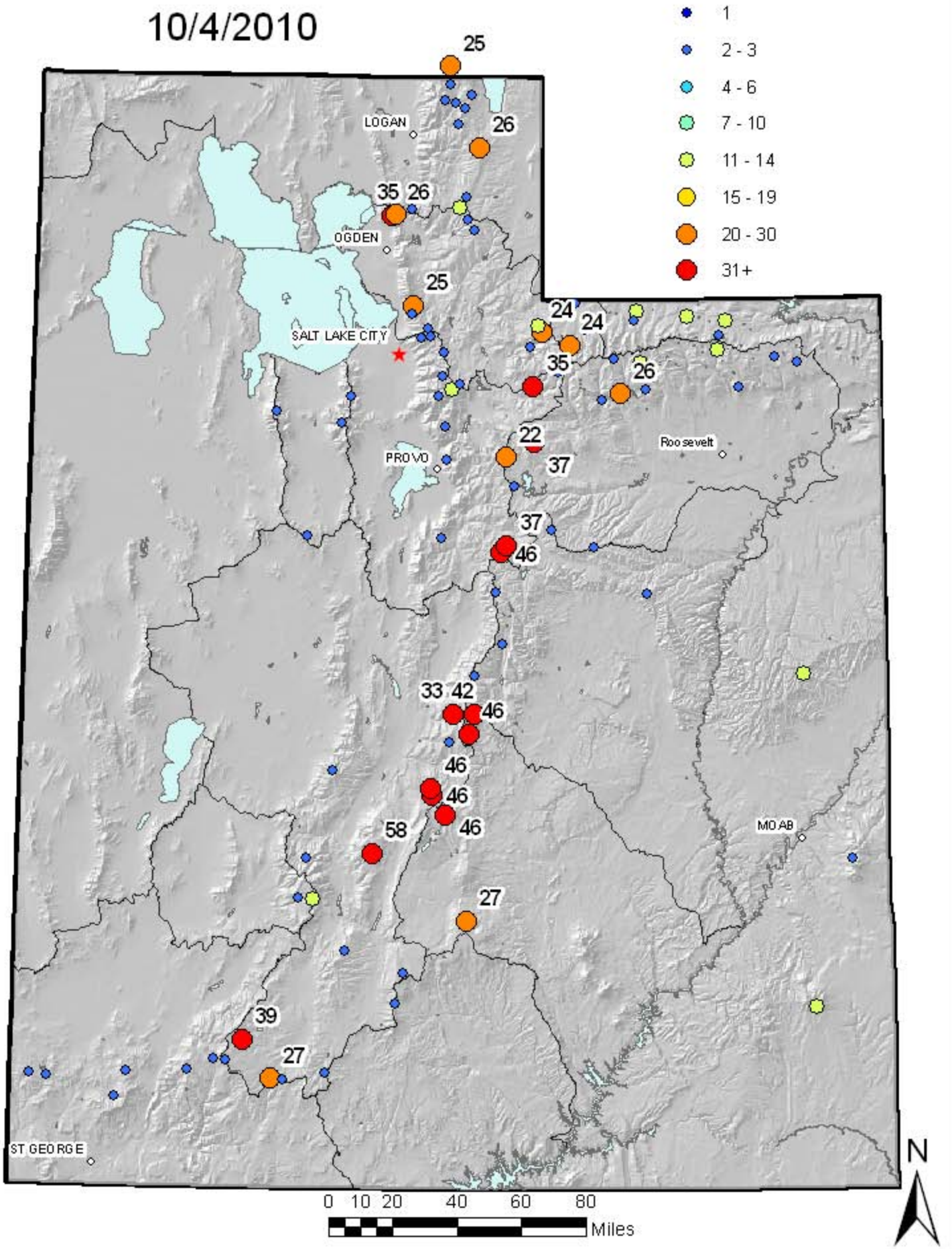
The water year to date precipitation percent of normal represents the accumulated precipitation found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first reading of the day (typically 00:00).

Prepared by the USDA/NRCS National Water and Climate Center
Portland, Oregon http://www.wcc.nrcs.usda.gov/gis/
Based on data from http://www.wcc.nrcs.usda.gov/reports/
Science contact: Tom.Pagano@por.usda.gov 503 414 3010

Days Without Precipitation

Days since 0.5" Accumulated Precipitation

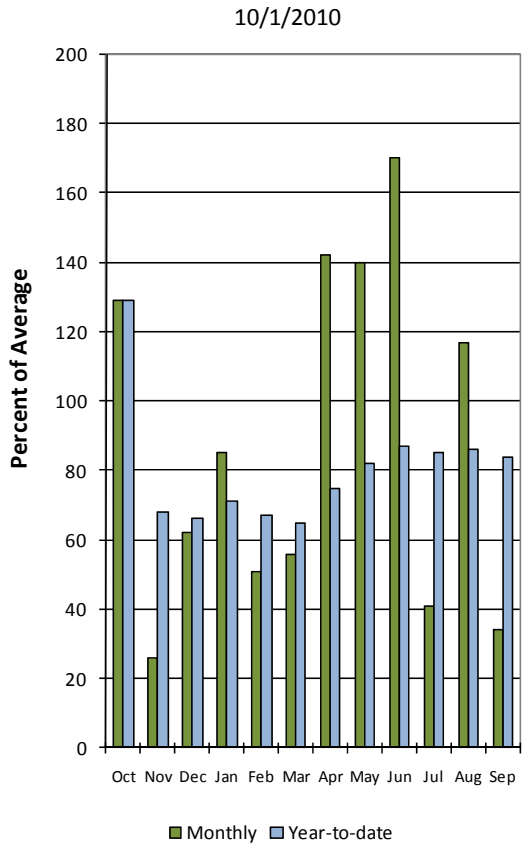
10/4/2010



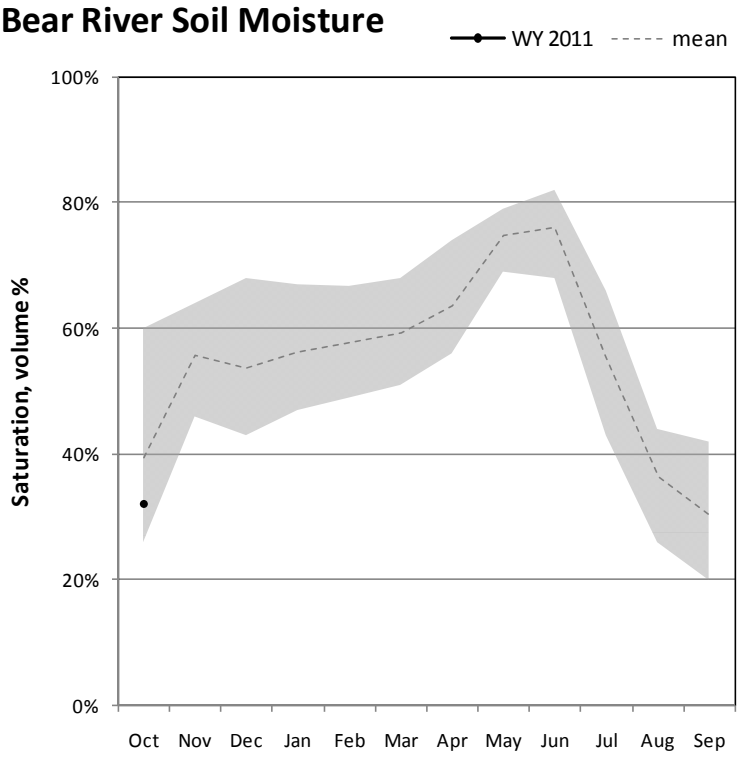
Bear River Basin
October 1, 2010

Precipitation in September was much below average at 34%, which brings the seasonal accumulation (Oct-Sept) to 84% of average. Reservoir storage is low at 32% of capacity, which is 2% lower than this time last year. Soil moisture is at 32% compared to 35% last year.

Bear River Precipitation

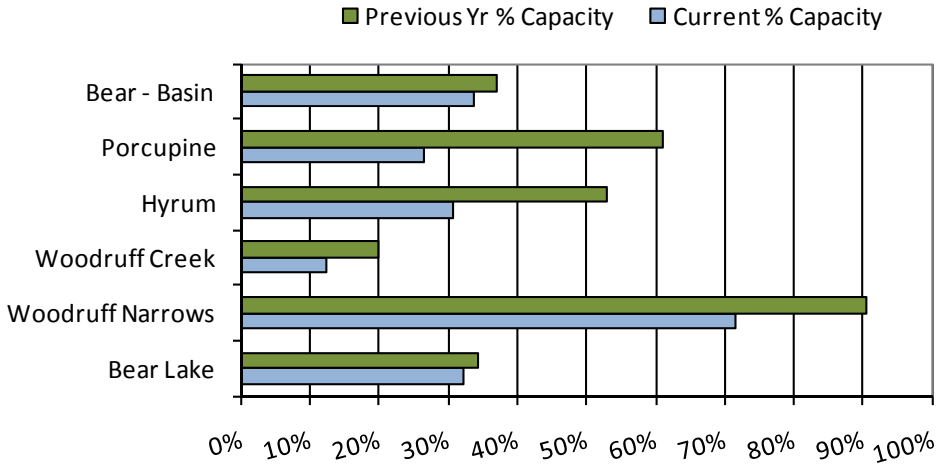


Bear River Soil Moisture



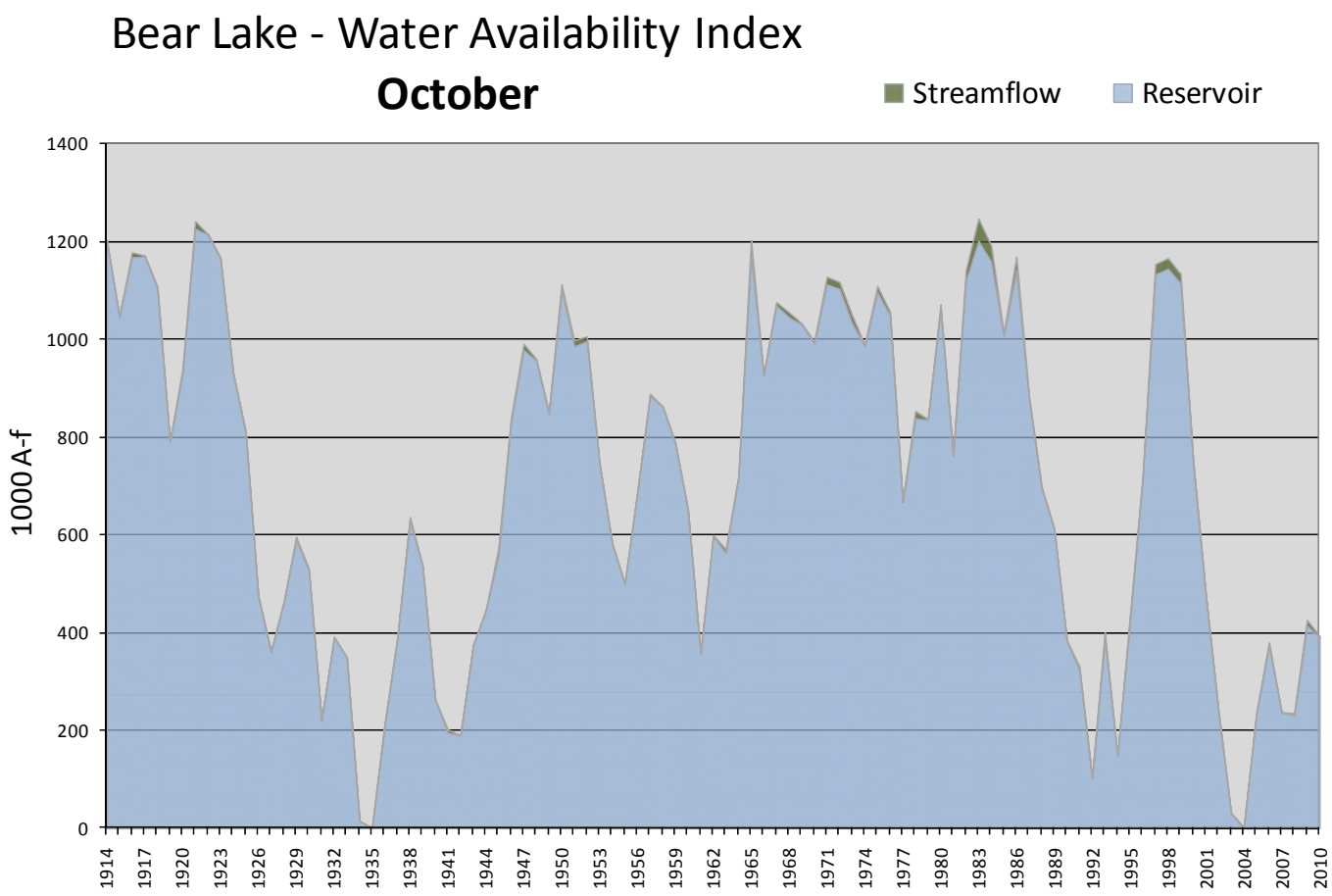
Percent saturation is calculated using the weighted average of volumetric soil moisture content at 2, 8, and 20-inch depths. Saturation is estimated as 40% volumetric water content. The gray area represents the range in saturation values since 2005.

September Bear River Reservoir Storage



October 1, 2010		**Water Availability Index**				
Basin or Region	September EOM* Bear Lake	September accumulated inflow to Bear Lake (*observed*)	Reservoir + Streamflow	WAI#	Percentile	Years with similar WAI
	*KAF^*	*KAF*	*KAF*		*%*	
Bear River	**391**	**3**	**394**	**-2.04**	**26**	**32,37,93,09**

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

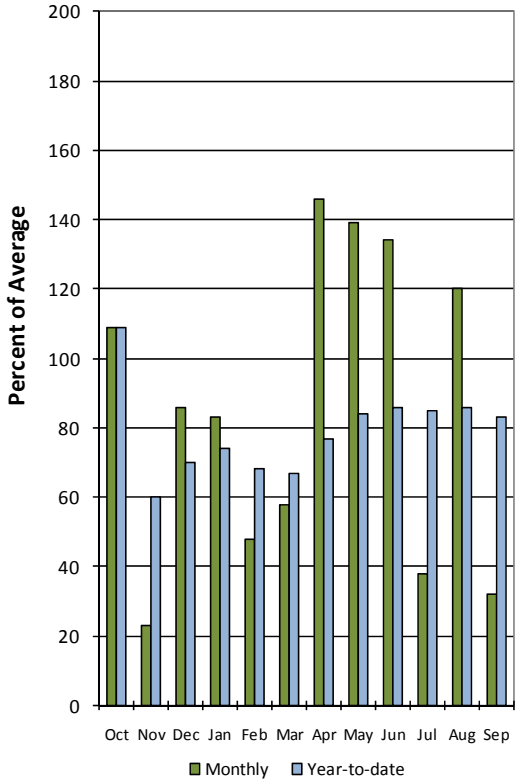


Weber and Ogden River Basin
October 1, 2010

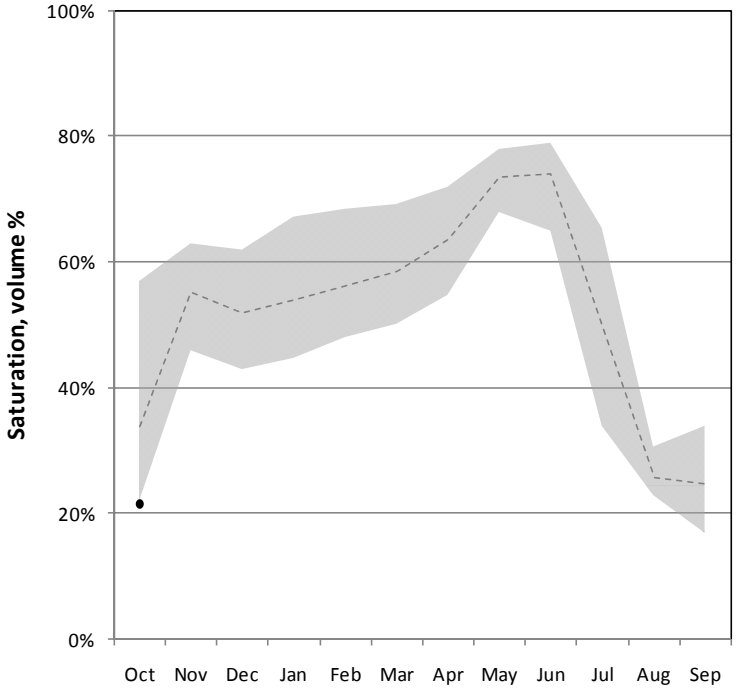
Precipitation in September was much below average at 32%, which brings the seasonal accumulation (Oct-Sept) to 83% of average. Reservoir storage is at 62% of capacity, which is 5% lower than this time last year. Soil moisture is at 22%, same as last year.

Weber River Precipitation

10/1/2010

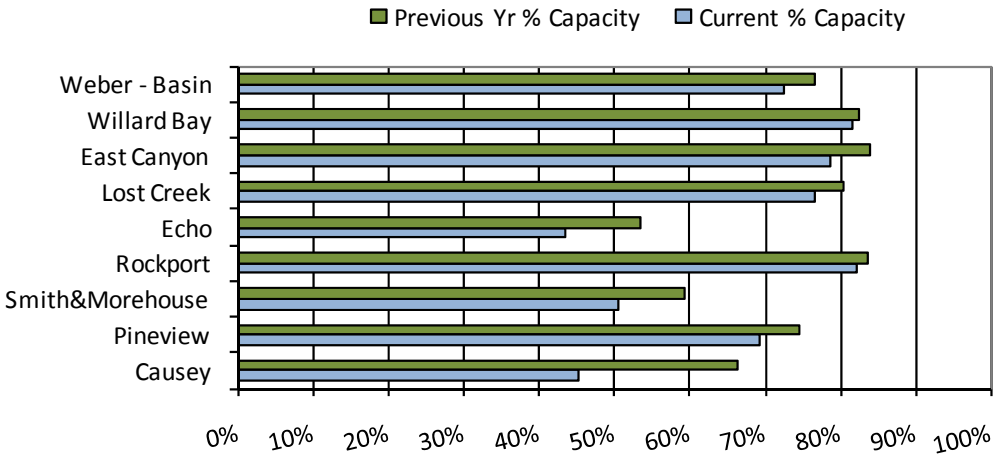


Weber River Soil Moisture



Percent saturation is calculated using the weighted average of volumetric soil moisture content at 2, 8, and 20-inch depths. Saturation is estimated as 40% volumetric water content. The gray area represents the range in saturation values since 2005.

September Weber Basin Reservoir Storage

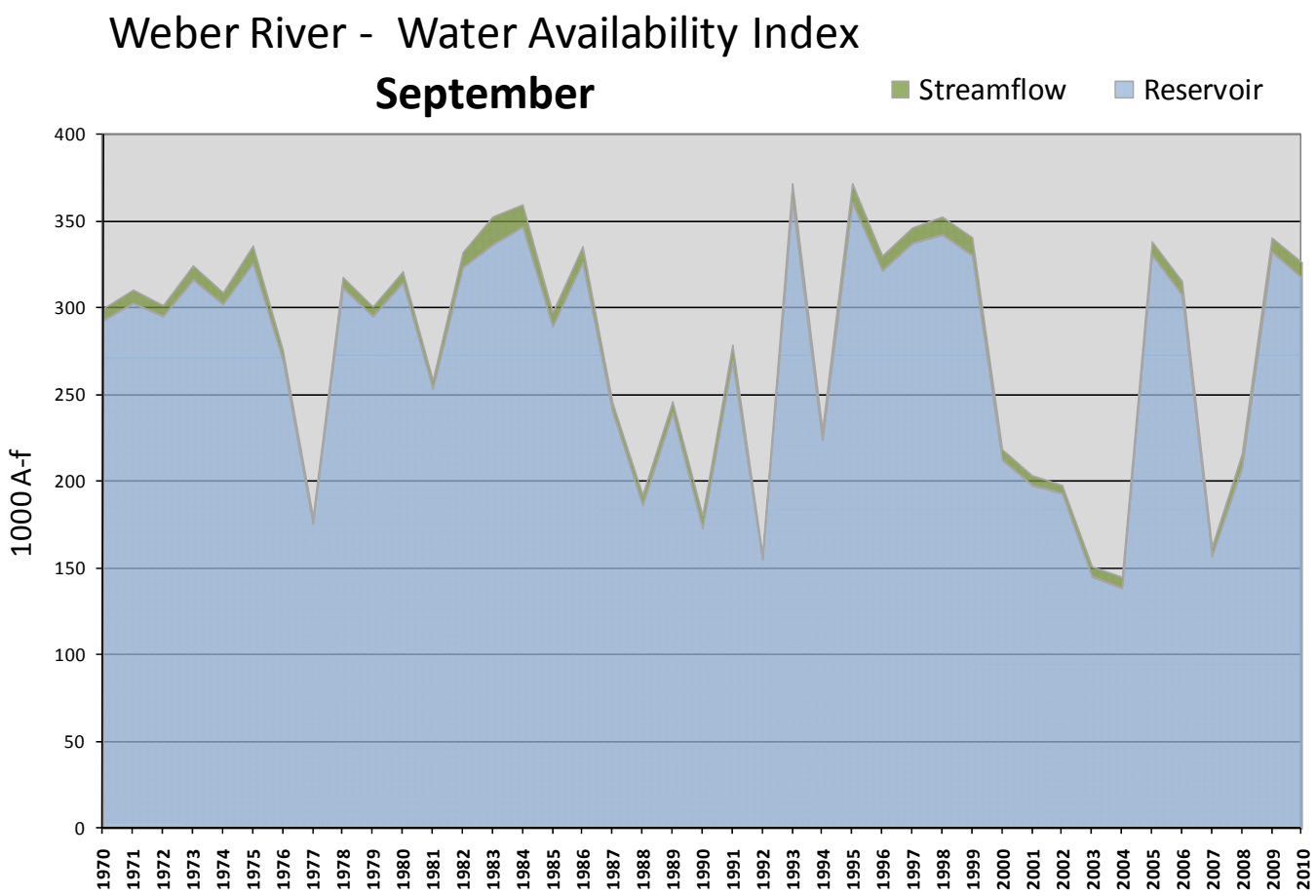


October 1, 2010

Water Availability Index

Basin or Region	September EOM* Reservoirs	September accumulated flow at Weber near Oakley (*observed*)	Reservoirs + Streamflow	WAI#	Percentile	Years with similar WAI
	*KAF^*	*KAF*	*KAF*		*%*	
Weber River	**283**	**5**	**287**	**0.20**	**52**	**71,72,85,06**

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

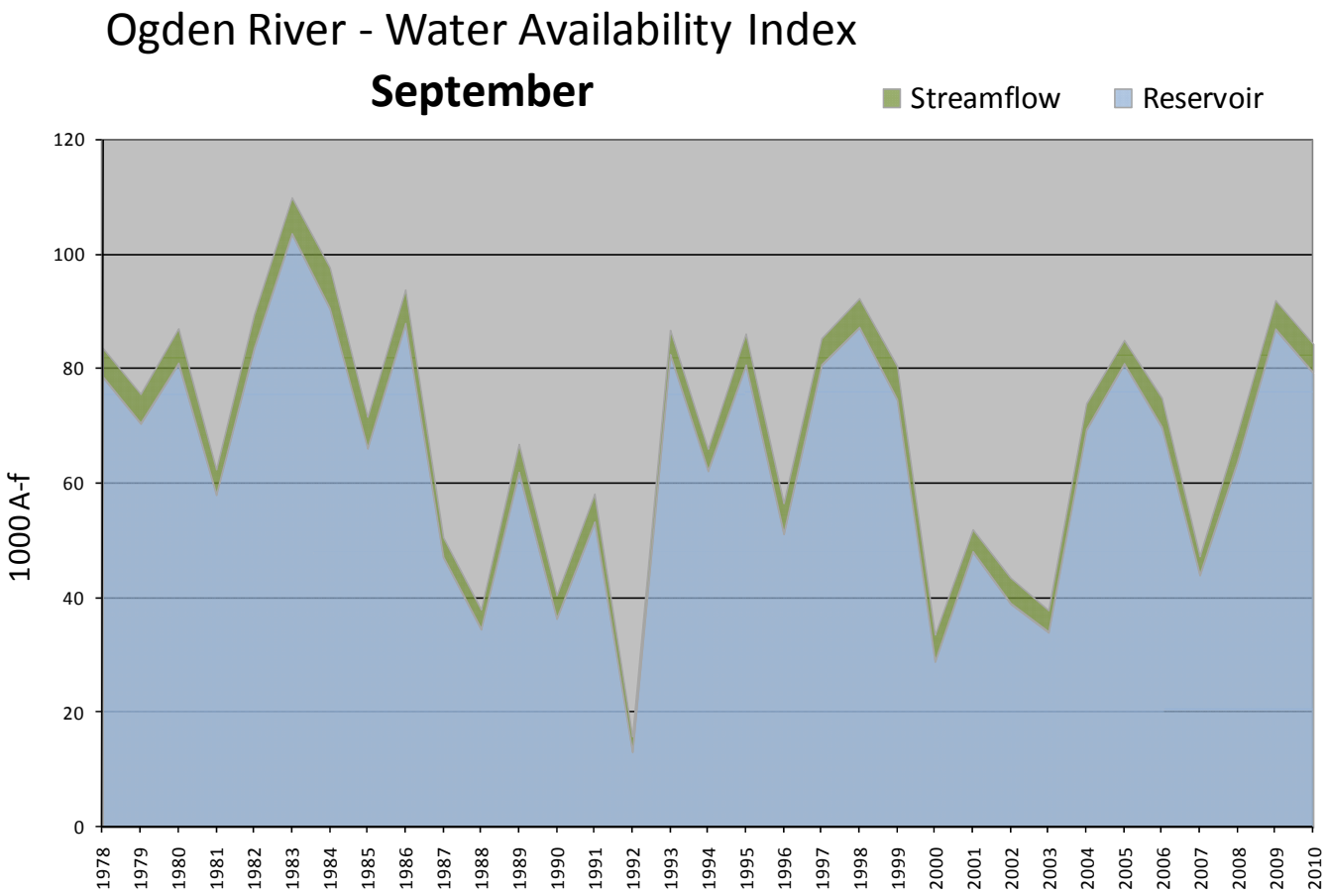


October 1, 2010

Water Availability Index

Basin or Region	September EOM* Pine View & Causey	September accumulated flow at South Fork Ogden (*observed*)	Reservoir + Streamflow	WAI#	Percentile	Years with similar WAI
	*KAF^*	*KAF*	*KAF*		*%*	
Ogden River	**59**	**3**	**62**	**0.00**	**50**	**79,89,04,06**

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

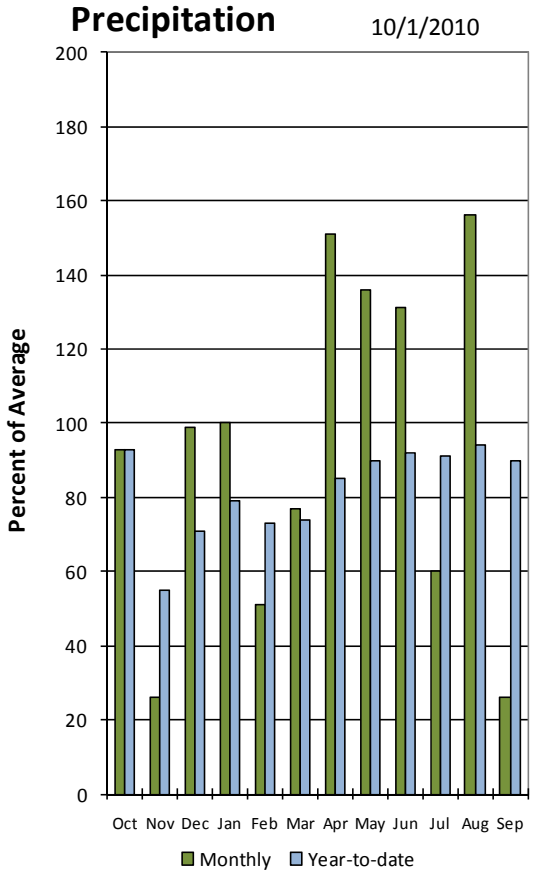


Utah Lake, Jordan River, & Tooele Valley Basins

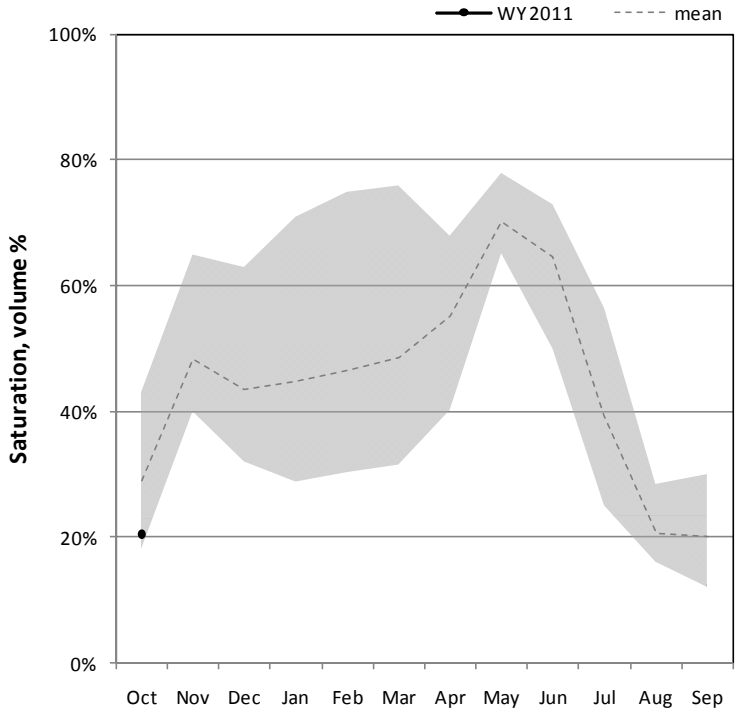
October 1, 2010

Precipitation in September was much below average at 26%, which brings the water year accumulation (Oct-Sept) to 90% of average. Reservoir storage is at 82% of capacity, which is 3% less than this time last year. Soil moisture is at 21% compared to 24% last year.

Jordan / Provo River Precipitation



Jordan / Provo River Soil Moisture



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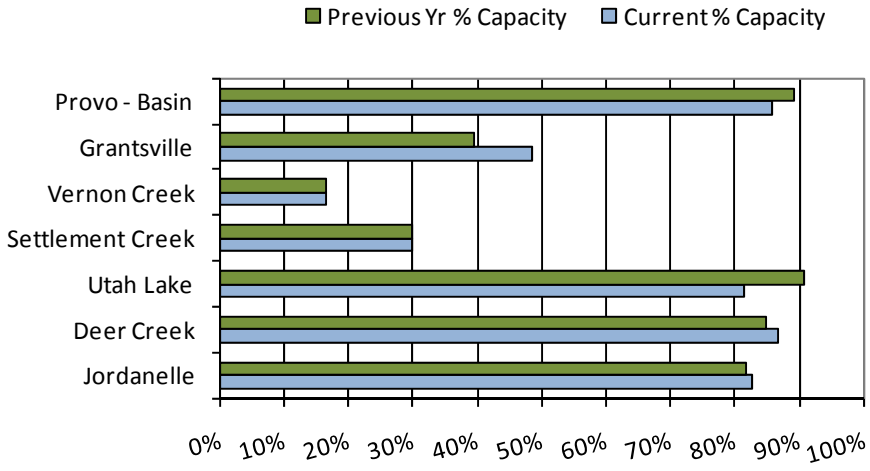
Jordan / Provo River Reservoir Storage

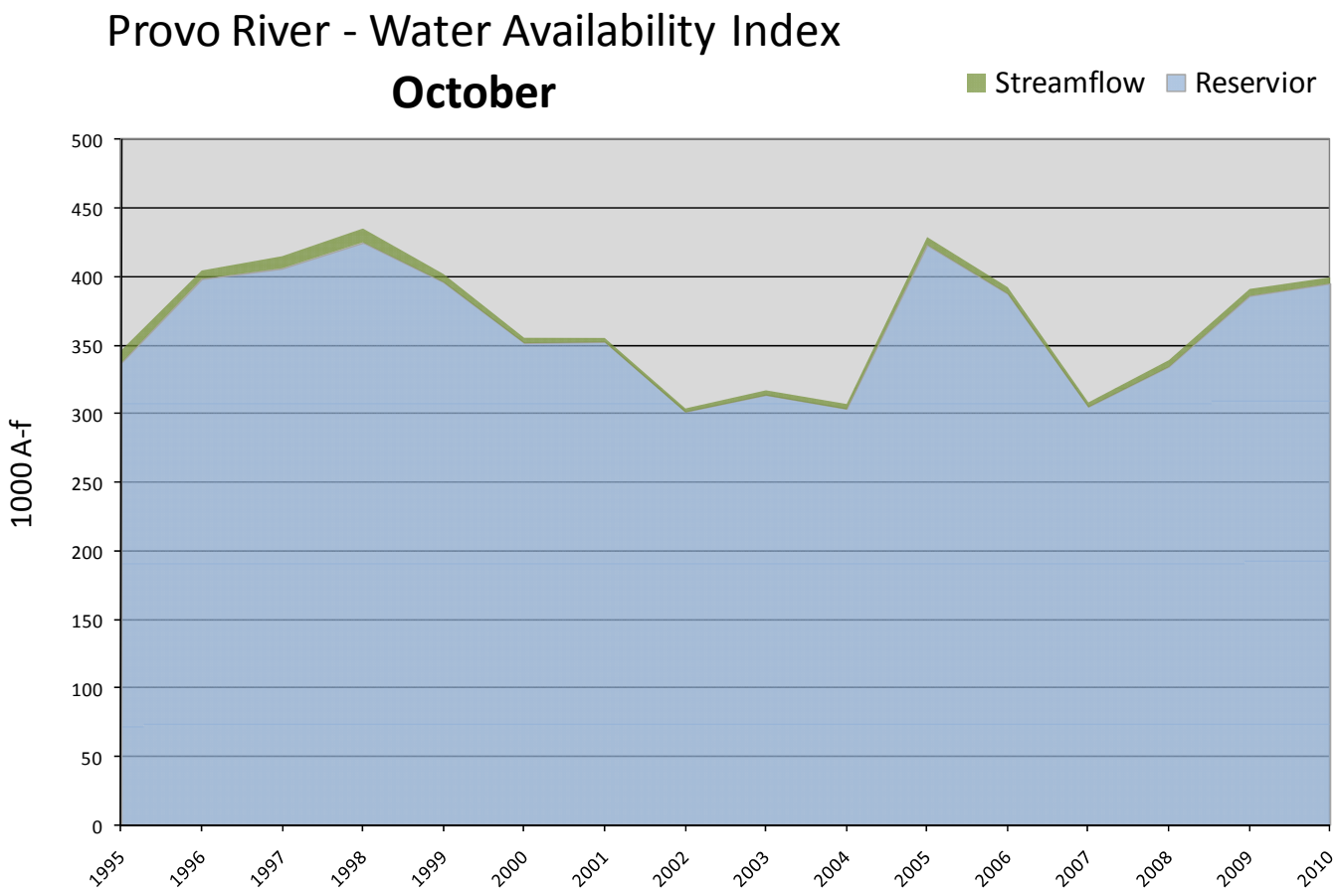


October 1, 2010

Water Availability Index

Basin or Region	September EOM* Deer Creek, Jordanelle	September accumulated flow Provo River at Woodland (*observed*)	Reservoir + Streamflow	WAI#	Percentile	Years with similar WAI
	*KAF^*	*KAF*	*KAF*		*%*	
Provo	**365**	**2**	**367**	**-0.74**	**41%**	**99, 06, 09, 00**

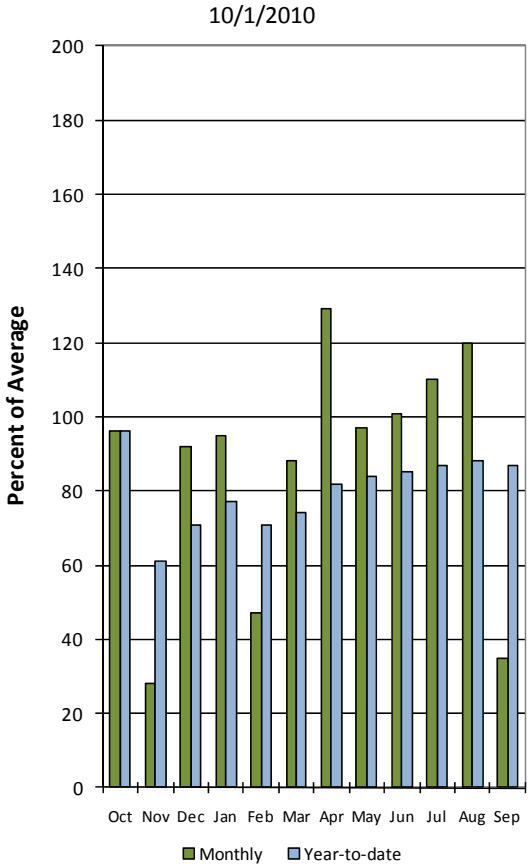
**EOM, end of month; # WAI, water availability index; ^KAF, thousand acre-feet.*



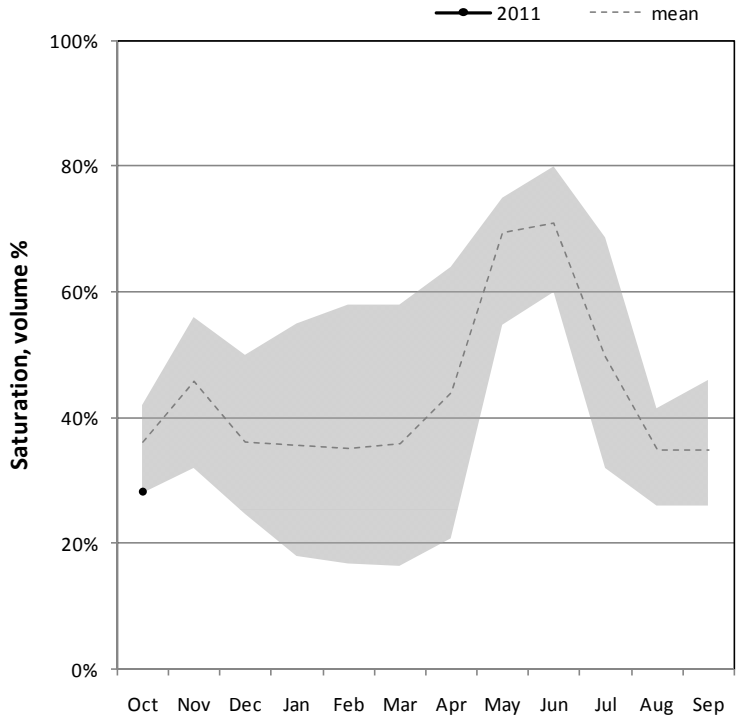
Uintah Basin and Dagget SCDs
October 1, 2010

Precipitation in September was below average at 35%, which brings the seasonal accumulation (Oct-Sept) to 87% of average. Reservoir storage is at 81% of capacity, which is 3% lower than at this time last year. Soil moisture is at 29% compared to 34% last year.

Uintah Precipitation

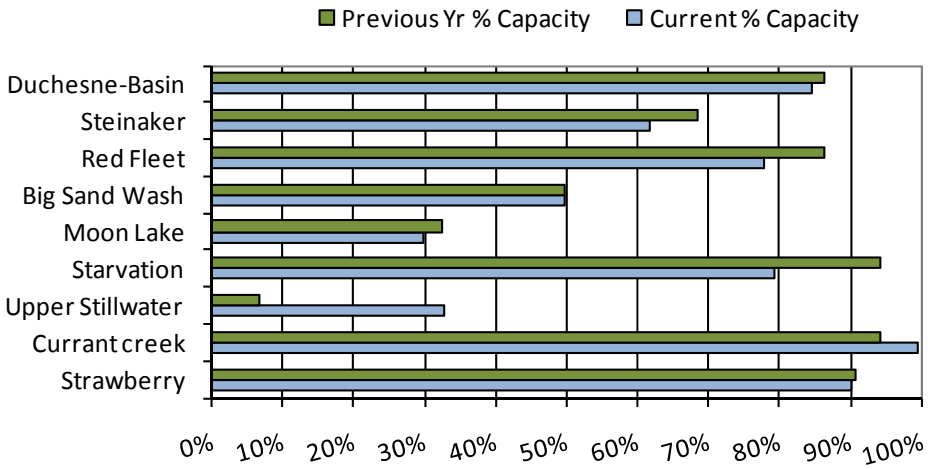


Uintah Basin Soil Moisture



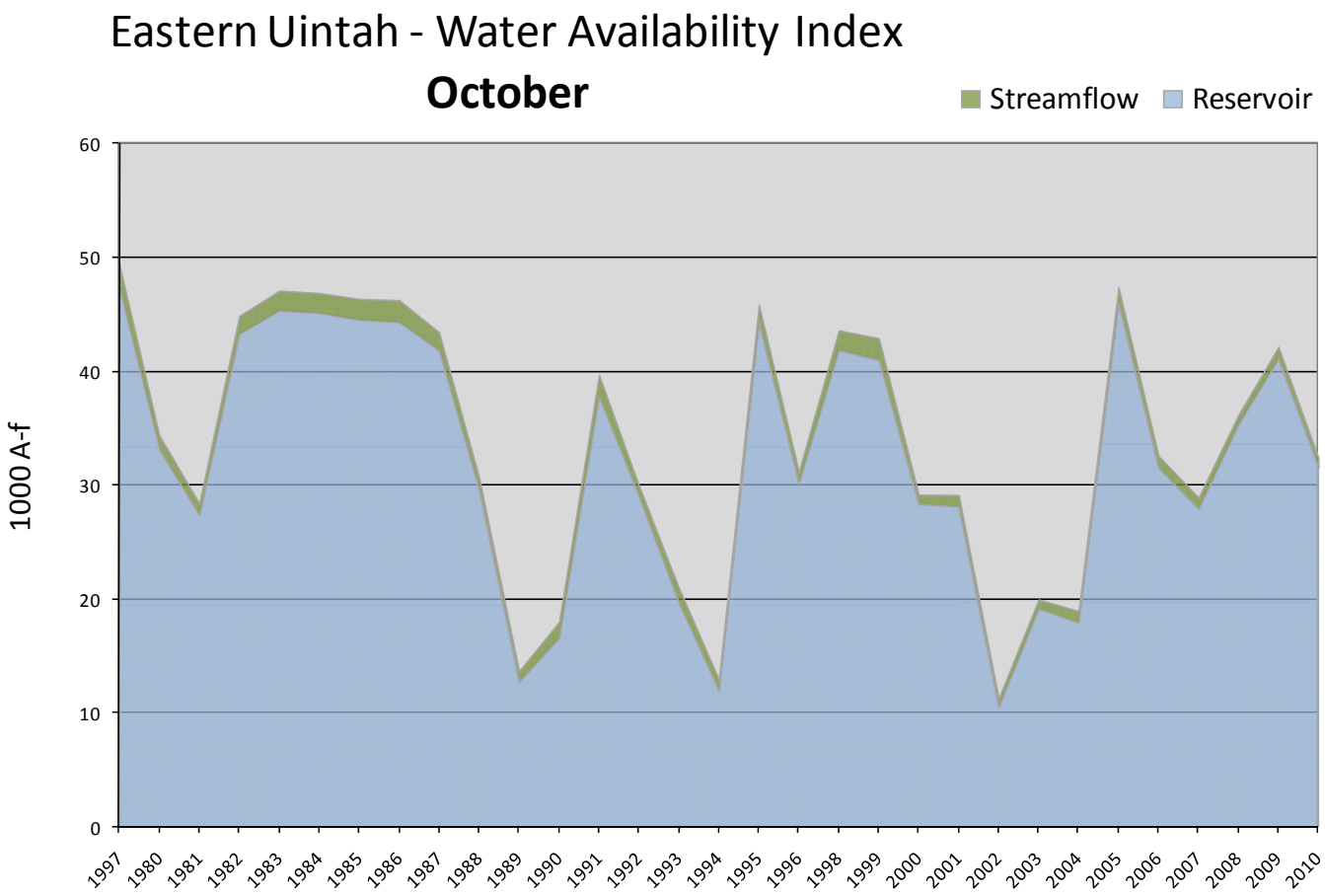
Percent saturation is calculated using the weighted average of volumetric soil moisture content at 2, 8, and 20-inch depths. Saturation is estimated as 40% volumetric water content. The gray area represents the range in saturation values since 2005.

September Uintah Basin Reservoir Storage



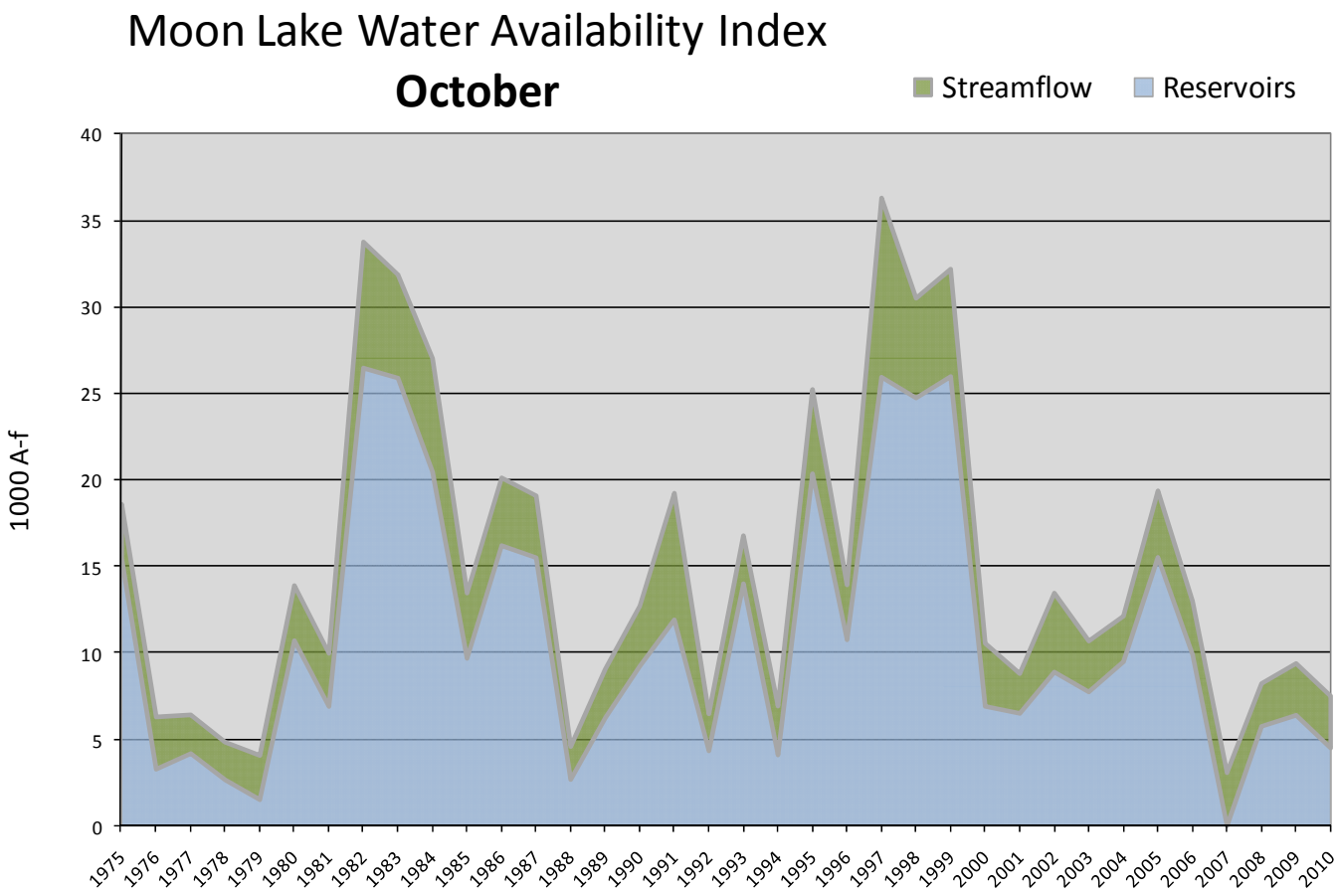
October 1, 2010		**Water Availability Index**				
Basin or Region	September EOM* Red Fleet and Steinaker	September accumulated flow Big Brush Creek (*observed*)	Reservoir + Streamflow	WAI#	Percentile	Years with similar WAI
	*KAF^*	*KAF*	*KAF*		*%*	
Eastern Uintah	**32**	**1**	**32**	**-0.26**	**47%**	**80,06,90,88**

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



October 1, 2010		**Water Availability Index**				
Basin or Region	September EOM* Moon Lake	September accumulated flow Lake Fork Creek above Moon Lake (*observed*)	Reservoir + Streamflow	WAI#	Percentile	Years with similar WAI
	*KAF^*	*KAF*	*KAF*		*%*	
Moon Lake	**5**	**3**	**8**	**-2.14**	**24%**	**01,08,94,92**

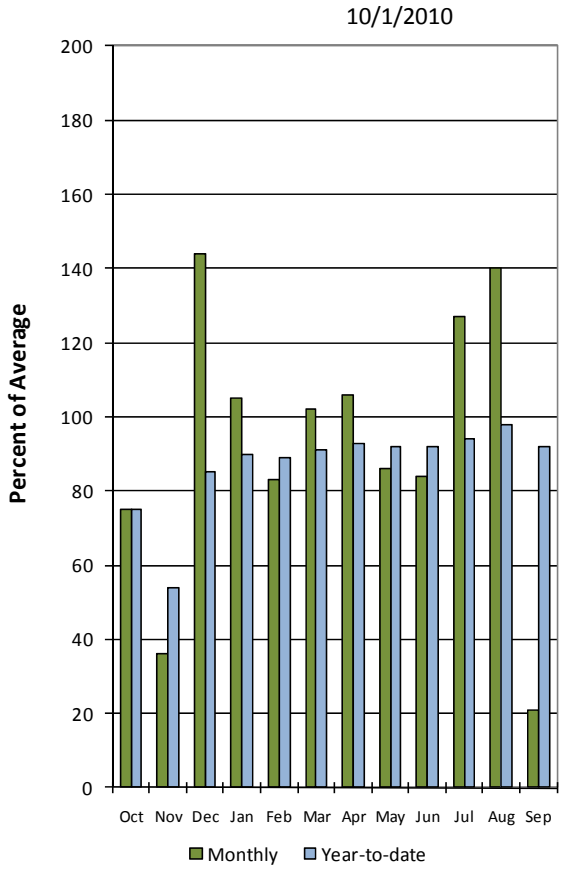
**EOM, end of month; # WAI, water availability index; ^KAF, thousand acre-feet.*



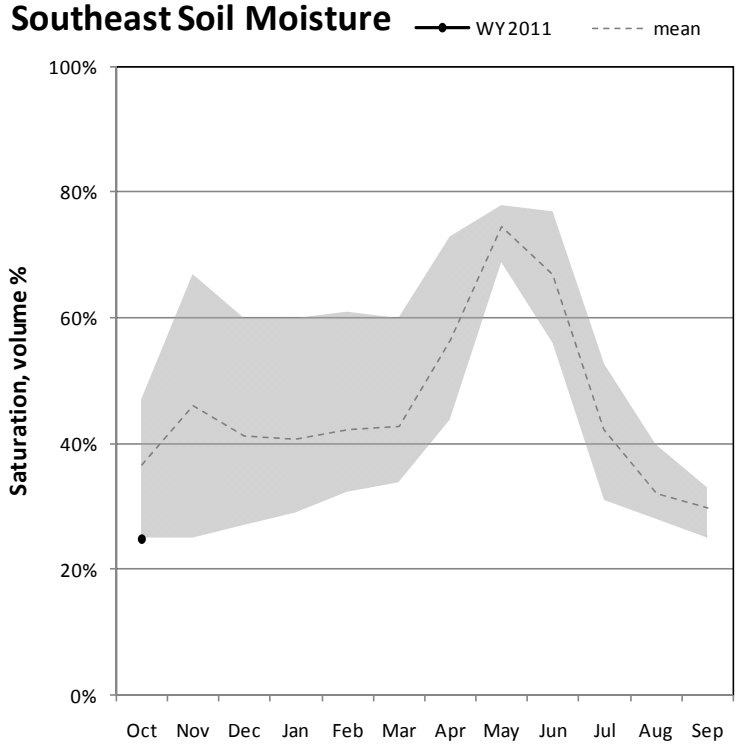
Southeast – Carbon, Emery, Wayne, Grand, and San Juan Counties
October 1, 2010

Precipitation in September was much below average at 21%, which brings the seasonal accumulation (Oct-Sep) to 92% of average. Reservoir storage is at 46% of capacity, which is 4% Lower than this time last year. Soil moisture is at 25% compared to 34% last year.

Southeast Utah Precipitation



Southeast Soil Moisture



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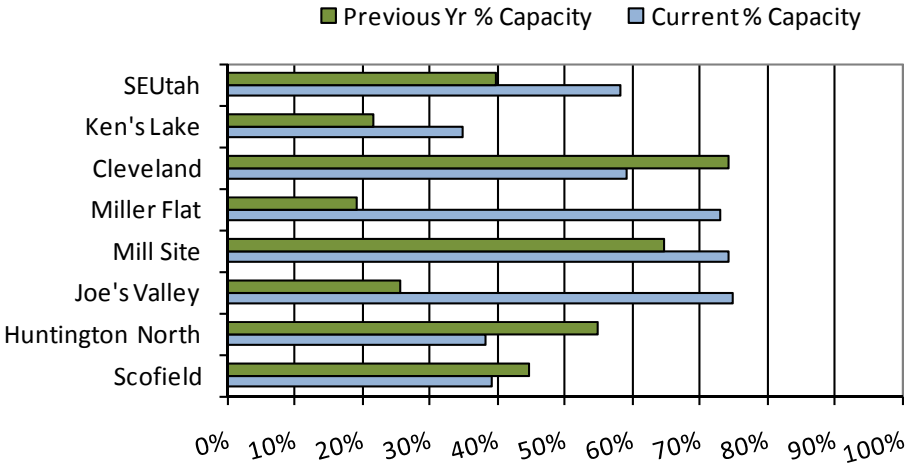
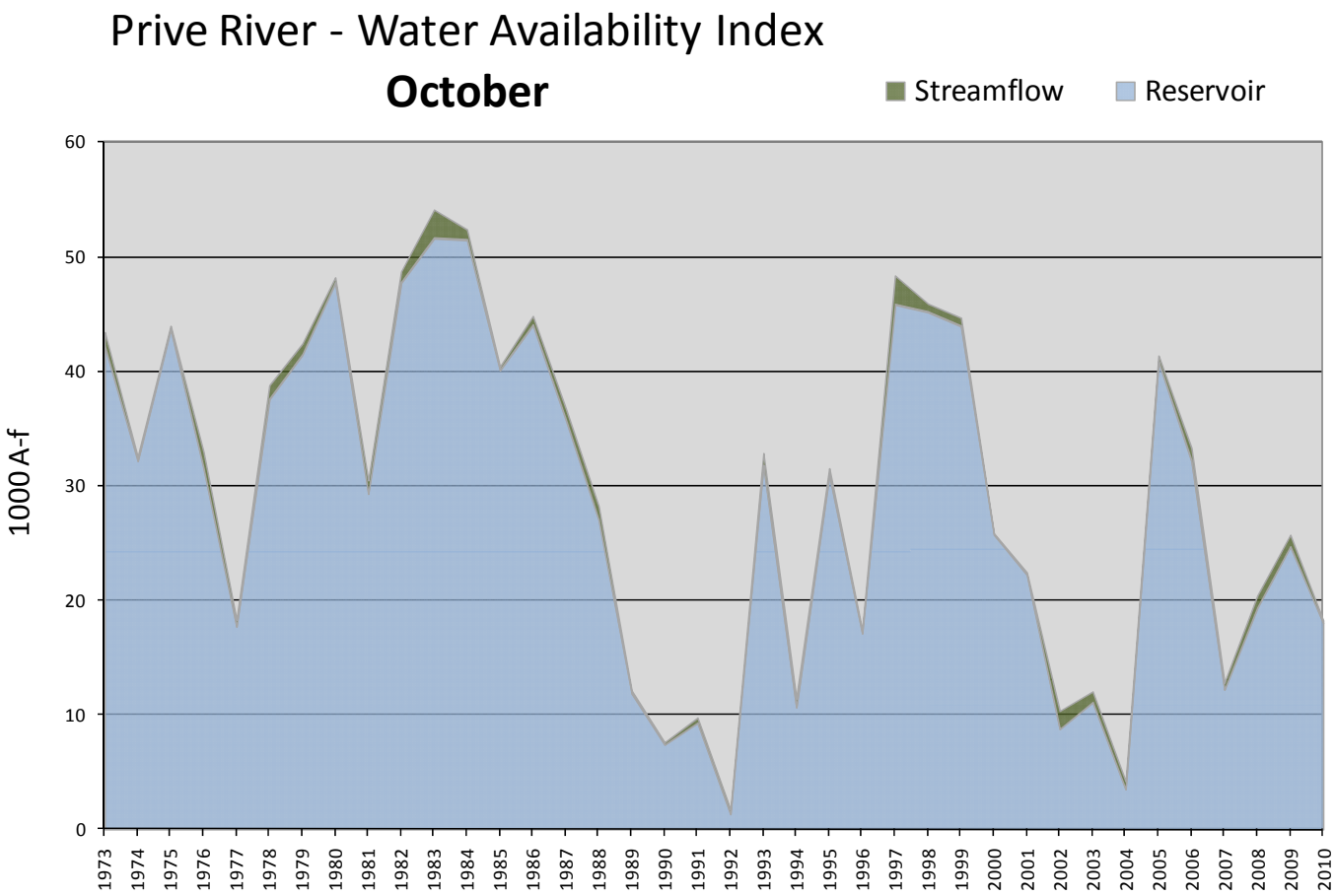
Southeast Utah Reservoir Storage

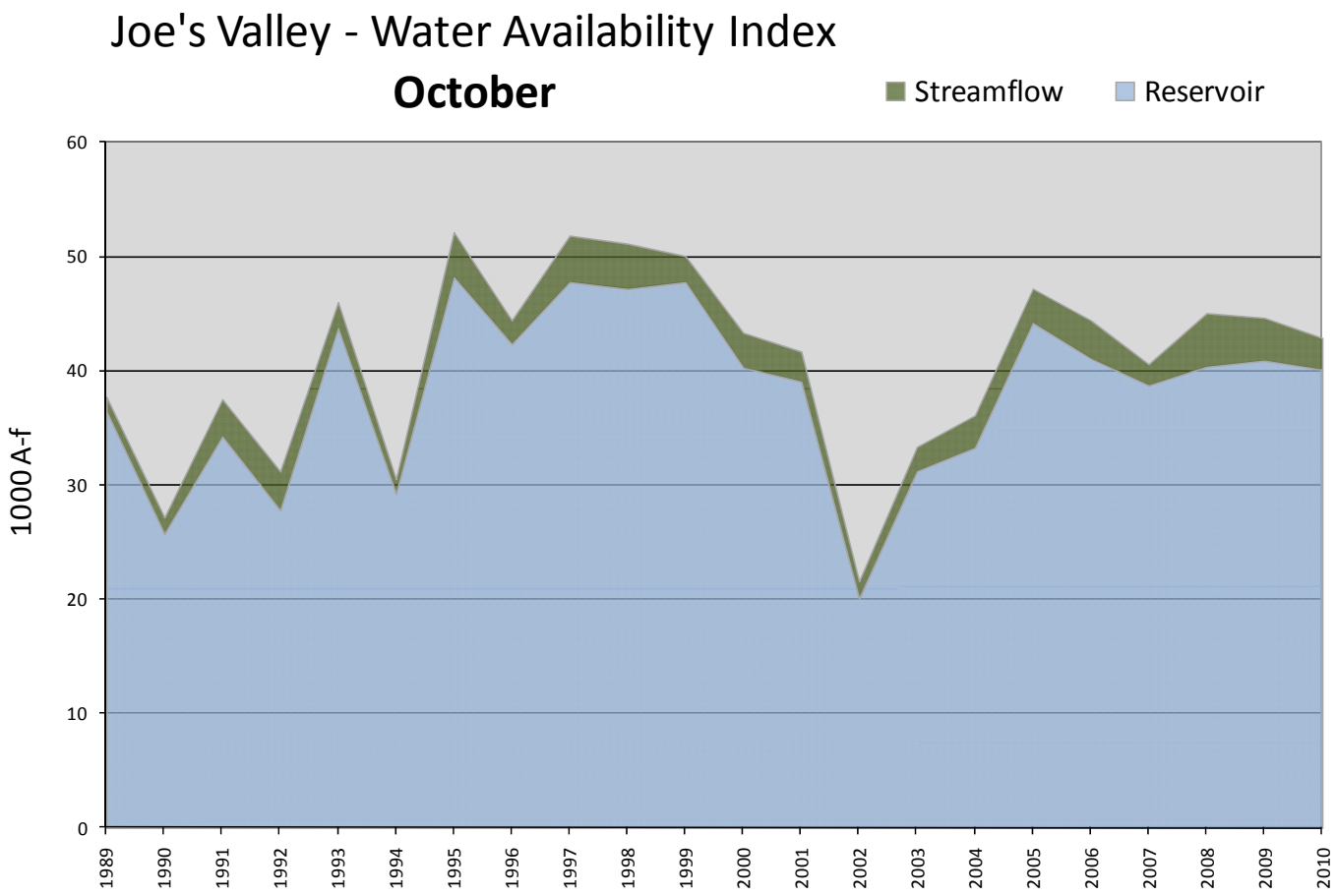


October 1, 2010		**Water Availability Index**				
Basin or Region	September EOM* Scofield	September accumulated inflow to Scofield (*calculated*)	Reservoir + Streamflow	WAI#	Percentile	Years with similar WAI
	*KAF^*	*KAF*	*KAF*		*%*	
Price River	**18**	**0.3**	**18**	**-1.82**	**28**	**07,96,77,08**

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

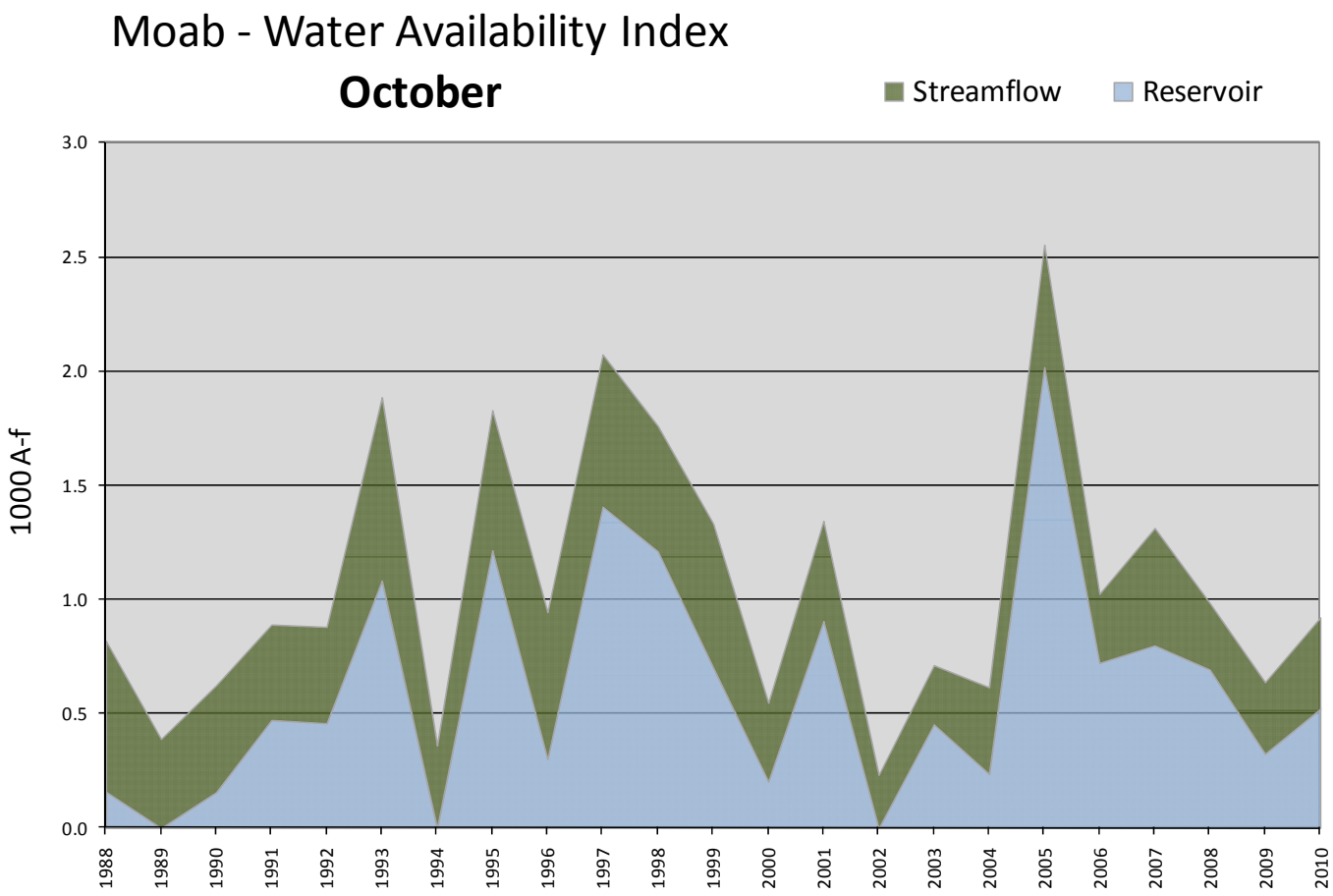


October 1, 2010		**Water Availability Index**				
Basin or Region	September EOM* Joe's Valley	September accumulated inflow to Joe's Valley (*calculated*)	Reservoir + Streamflow	WAI#	Percentile	Years with similar WAI
	*KAF^*	*KAF*	*KAF*		*%*	
Joe's Valley	**40.1**	**2.8**	**42.9**	**-0.18**	**48**	**07,01,00,06**
**EOM, end of month; # WAI, water availability index; ^KAF, thousand acre-feet.*						



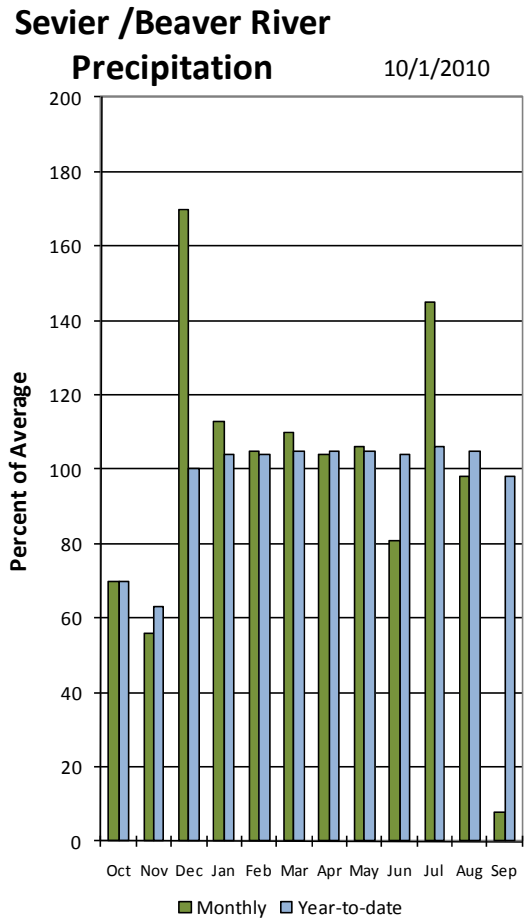
October 1, 2010		**Water Availability Index**				
Basin or Region	September EOM* Ken's Lake Reservoir	September accumulated flow Mill Creek at Sheley (*observed*)	Reservoir + Streamflow	WAI#	Percentile	Years with similar WAI
	*KAF^*	*KAF*	*KAF*		*%*	
Moab	**0.5**	**0.4**	**0.9**	**0.00**	**50**	**92,91,96,08**

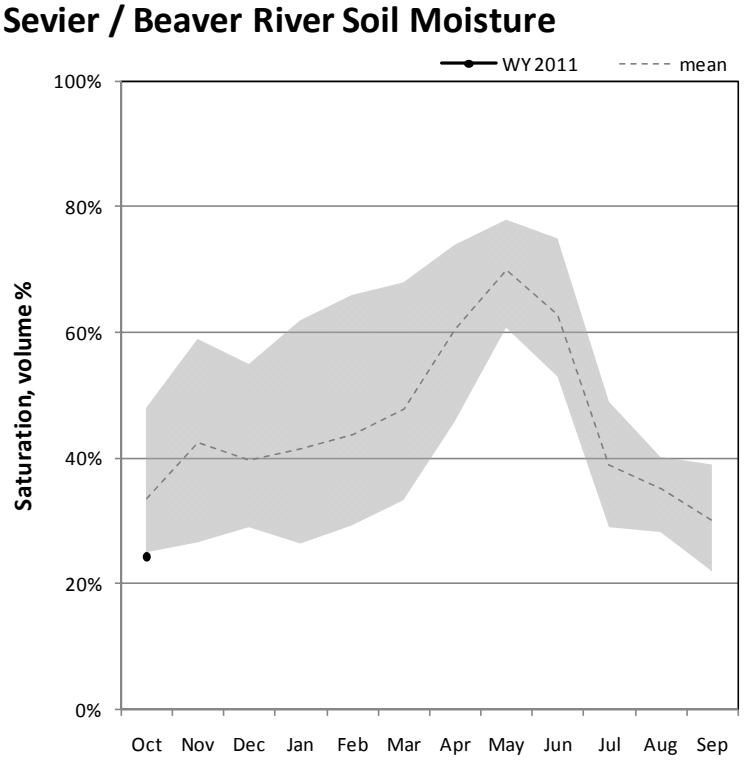
**EOM, end of month; # WAI, water availability index; ^KAF, thousand acre-feet.*



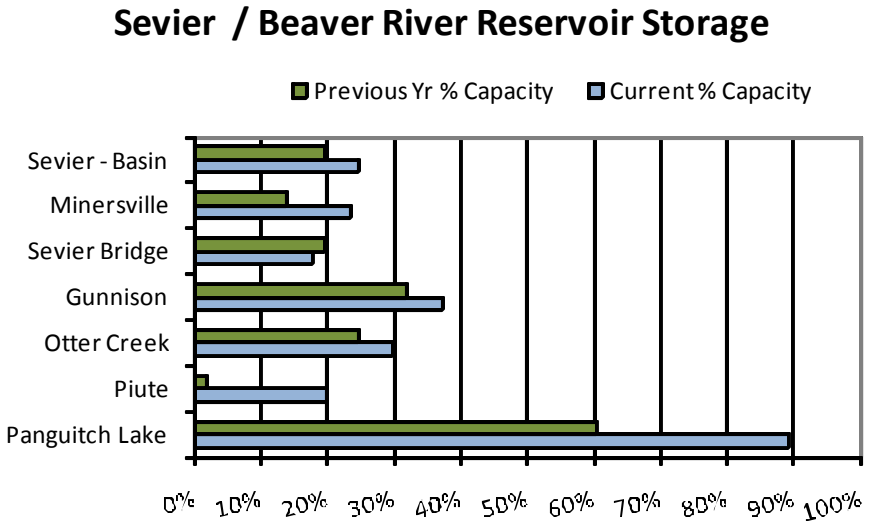
Sevier and Beaver River Basins
September 1, 2010

Precipitation in September was much below average at 8%, which brings the seasonal accumulation (Oct-Sep) to 98% of average. Reservoir storage is low at 22% of capacity, 3% more than last year. Soil moisture is at 22% compared to 24% last year.



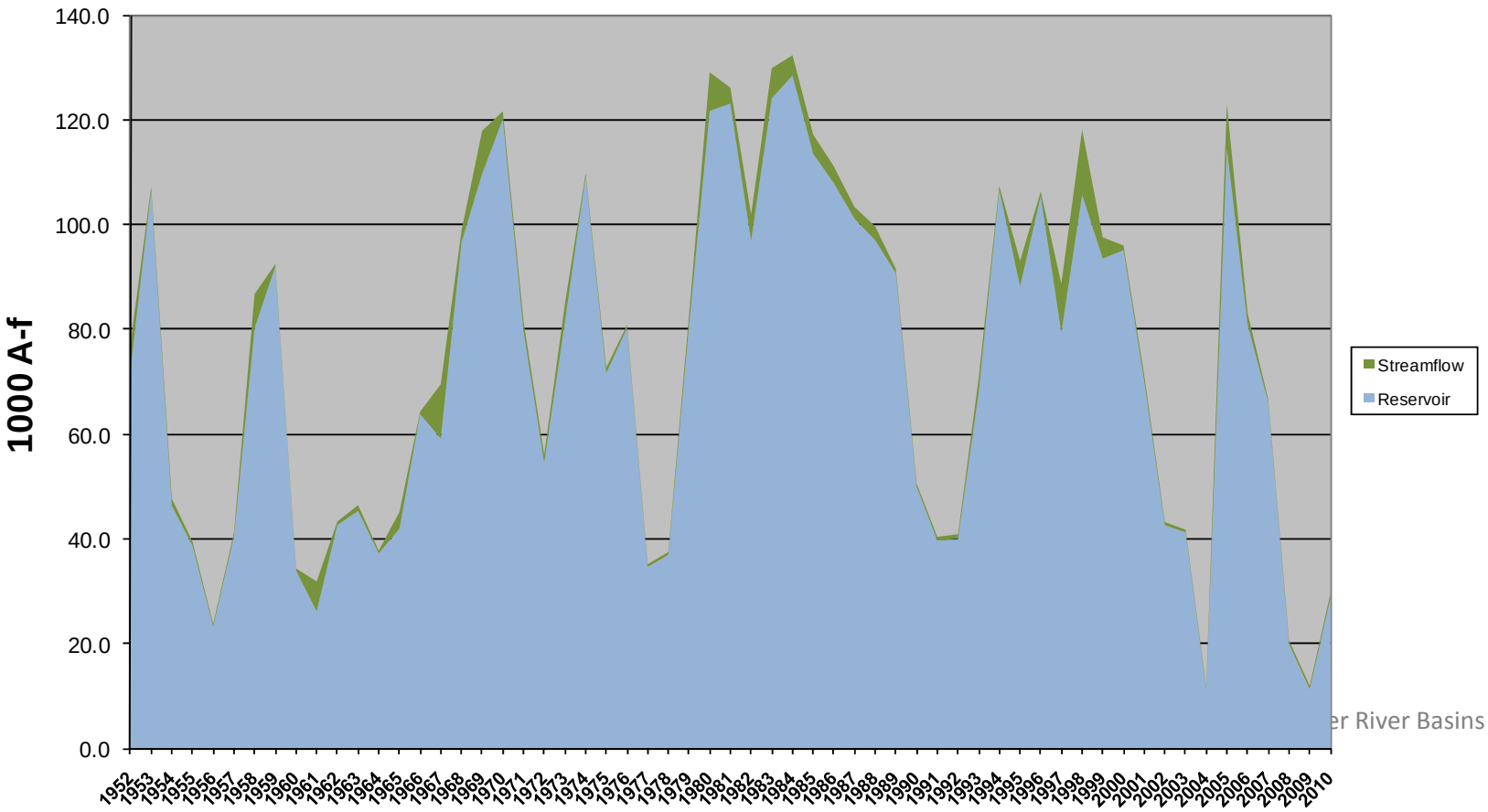


Percent saturation is calculated using the weighted average of volumetric soil moisture content at 2, 8, and 20-inch depths. Saturation is estimated as 40% volumetric water content. The gray area represents the range in saturation values since 2005.



October 1, 2010		**Water Availability Index**				
Basin or Region	September EOM* Otter Creek and Piute	September accumulated flow at Kingston (*observed*)	Reservoir + Streamflow	WAI#	Percentile	Years with similar WAI
	*KAF^*	*KAF*	*KAF*		*%*	
Upper Sevier River	**28.4**	**0.9**	**29.3**	**-3.47**	**8**	**08,56,61,60**
**EOM, end of month; # WAI, water availability index; ^KAF, thousand acre-feet.*						

Upper Sevier River Water Availability Index October

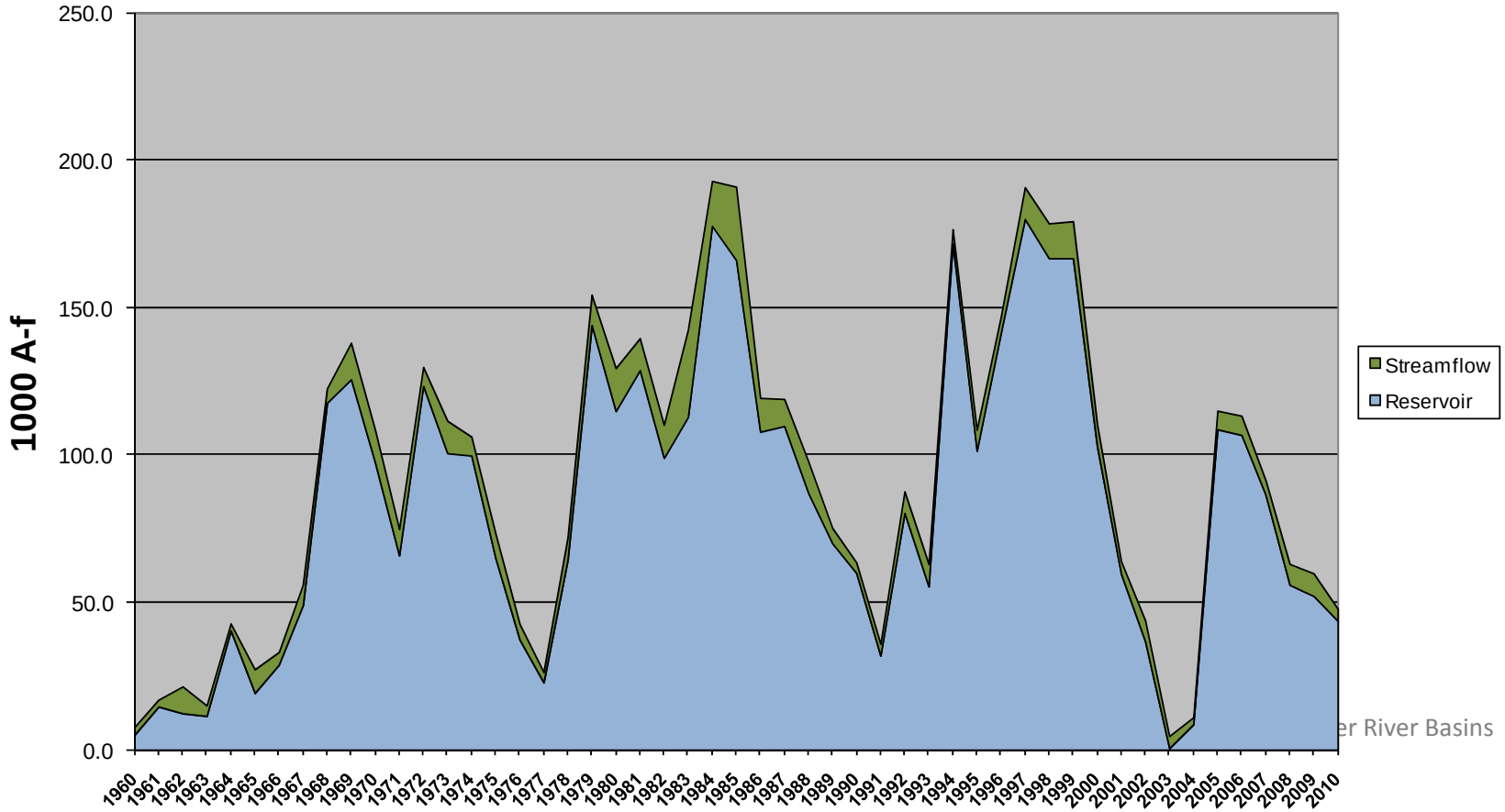


er River Basins

October 1, 2010		**Water Availability Index**				
Basin or Region	September EOM* Sevier Bridge	September accumulated flow Sevier at Gunnsion (*observed*)	Reservoir + Streamflow	WAI#	Percentile	Years with similar WAI
	*KAF^*	*KAF*	*KAF*		*%*	
Lower Sevier River	**43.7**	**4.1**	**47.8**	**-1.92**	**27**	**64,02,67,09**

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

Lower Sevier River Water Availability Index October

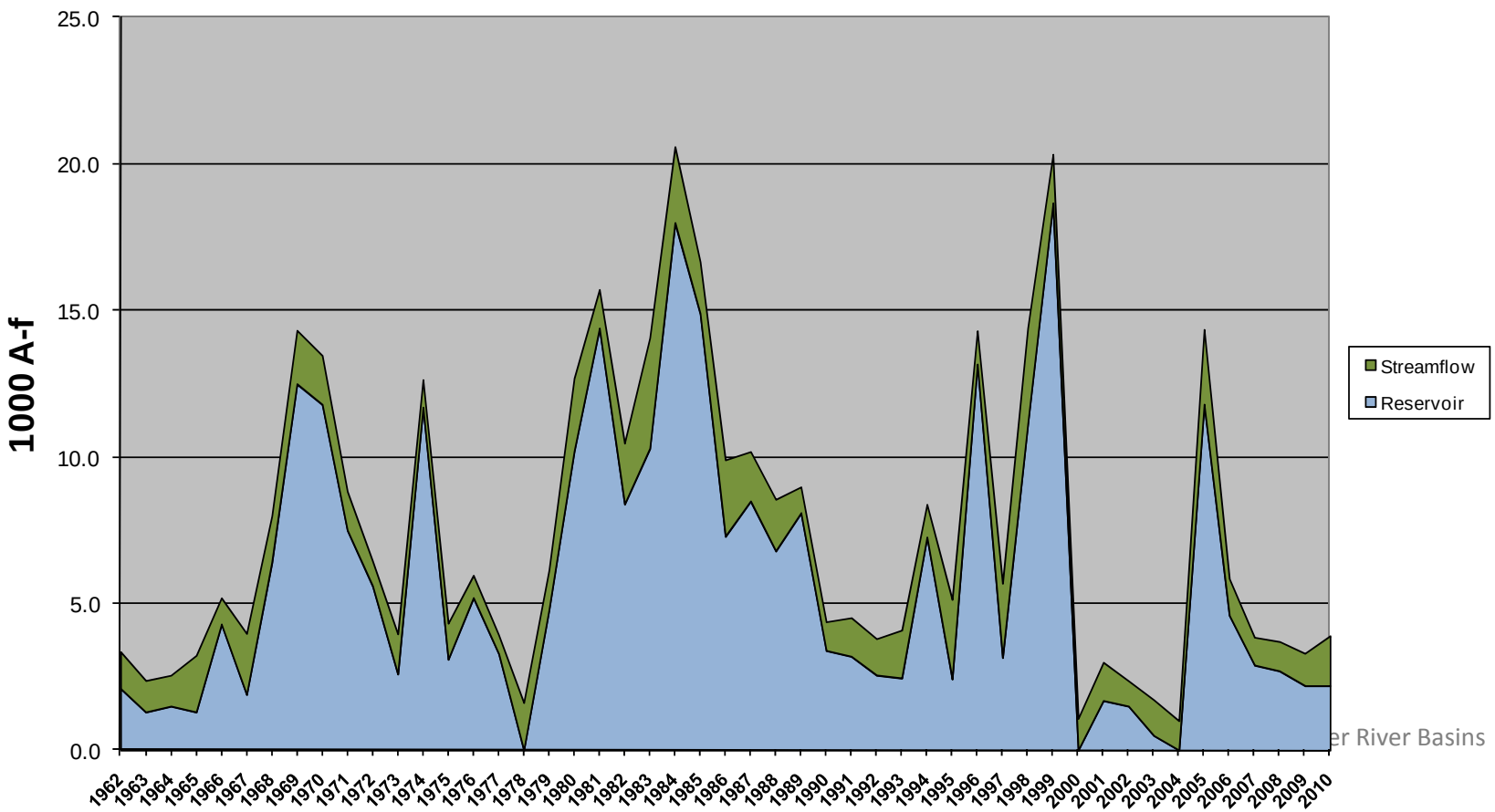


er River Basins

October 1, 2010		**Water Availability Index**				
Basin or Region	September EOM* Minersville Reservoir	September accumulated flow Beaver River at Beaver (*observed*)	Reservoir + Streamflow	WAI#	Percentile	Years with similar WAI
	*KAF^*	*KAF*	*KAF*		*%*	
Beaver	**2.2**	**1.7**	**3.9**	**-1.67**	**30**	**92,07,77,73**

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

Beaver River Water Availability Index
October



er River Basins

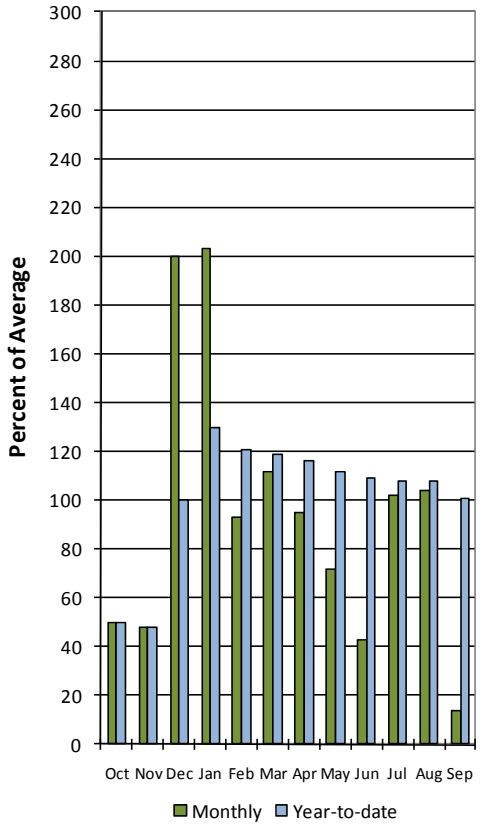
Southwest – E. Garfield, Kane, Washington, & Iron Counties

October 1, 2010

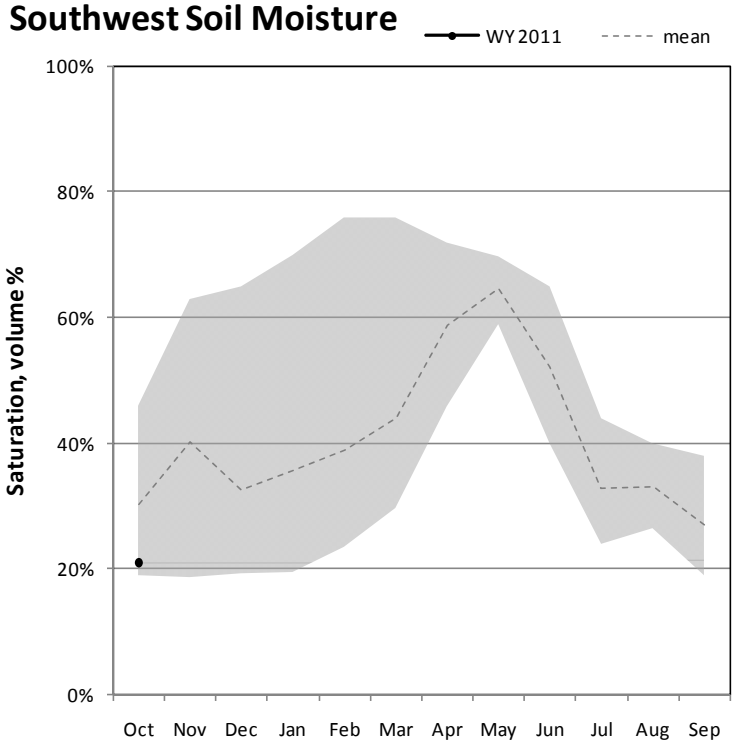
Precipitation in September was much below average at 14%, which brings the water year accumulation (Oct-Sept) to 101% of average. Reservoir storage is low at 54% of capacity, which nearly the same as last year at this time. Soil moisture is at 21% the same as last year at this time.

Southwest Utah Precipitation

10/1/2010



Southwest Soil Moisture



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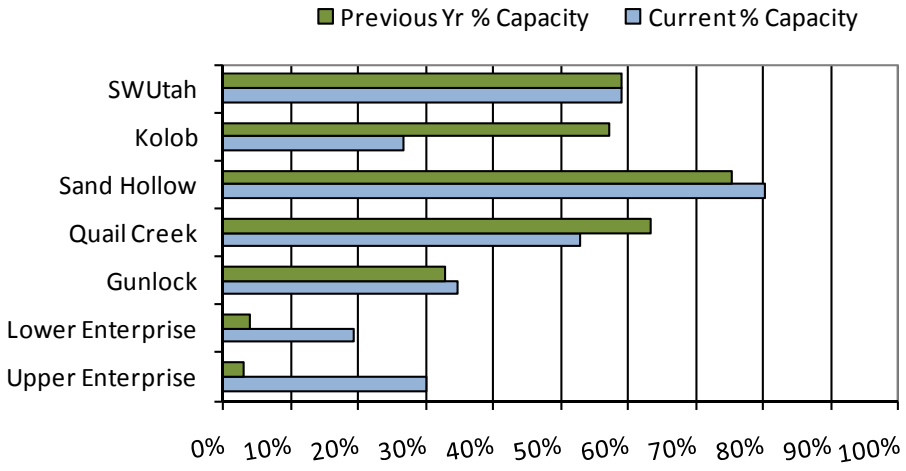
Southwest Utah Reservoir Storage

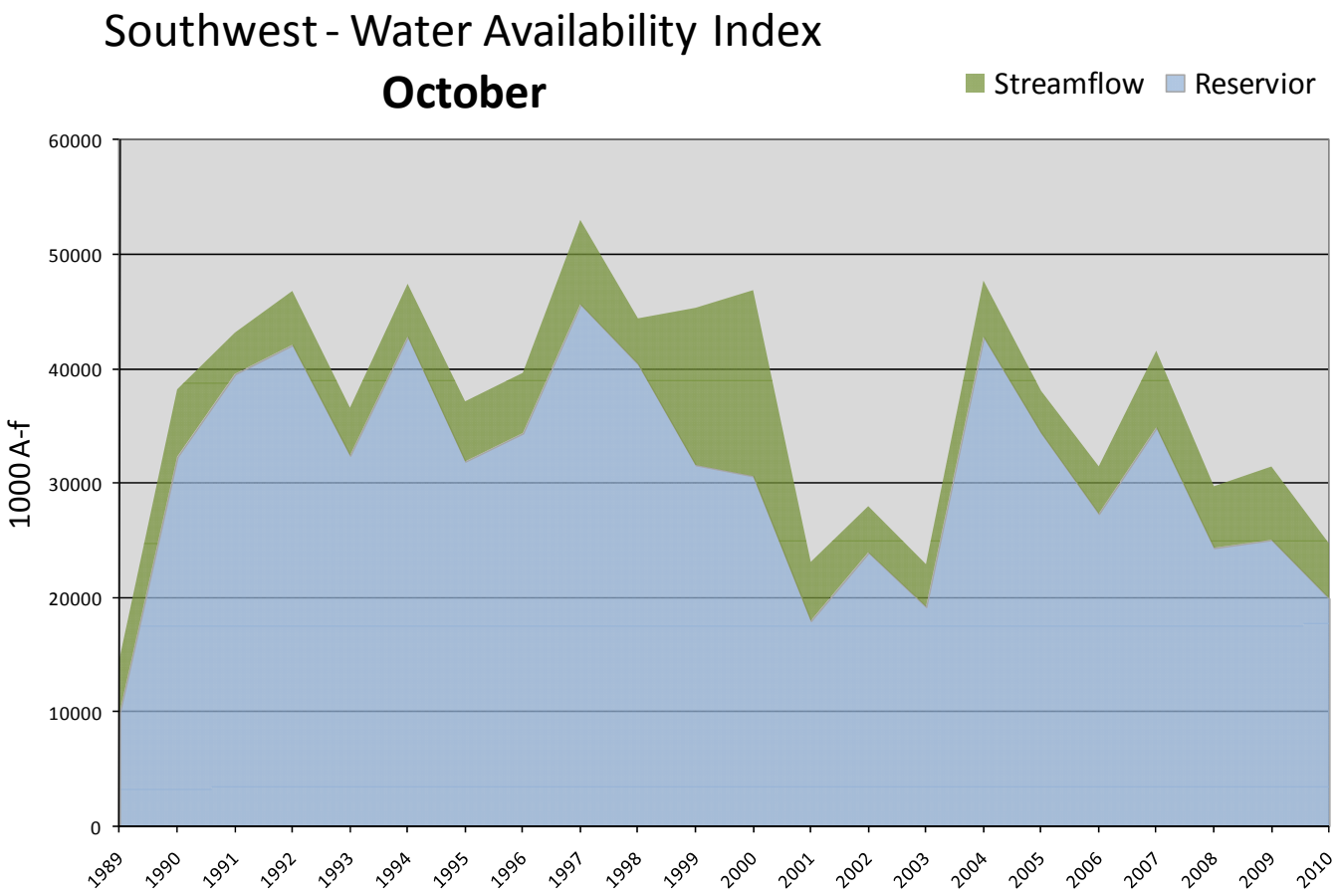


October 1, 2010

Water Availability Index

Basin or Region	September EOM* Reservoir	September accumulated flow Virgin and Santa Clara Rivers (*observed*)	Reservoir + Streamflow	WAI#	Percentile	Years with similar WAI
	*KAF^*	*KAF*	*KAF*		*%*	
Southwest	**9917**	**4744**	**14661**	**-2.72**	**17%**	**08, 02, 01, 03**

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



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Utah Climate and Water Report

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