

# WATER SUPPLY OUTLOOK



## CALIFORNIA AND NORTHERN NEVADA

**MAY  
2012**



California Nevada River Forecast Center  
NOAA - National Weather Service  
Sacramento, California

## DEFINITIONS:

**Acre-Feet:** The volume equal to one acre covered one foot deep (43,560 cubic feet).

**Forecast Period:** Generally, April 1<sup>st</sup> through July 31<sup>st</sup>, unless otherwise noted.

**April-High Forecast Period:** For the Lake Tahoe Stage Rise, the period from April 1<sup>st</sup> to the highest recorded lake stage level.

**April 1st Average:** The April 1<sup>st</sup> snowpack average is used as a reference point because it is normally the end of the winter snowfall season and the beginning of the spring runoff season.

**Residual Period:** The forecast period from the first of the current month through September 30<sup>th</sup>.

**Probability Forecasts:** Precipitation and snowfall accumulation of known probability as determined by analysis of past records are utilized in the preparation of probability runoff forecasts. The forecasts include an evaluation of the standard error of the prediction model. The forecasts are presented at three levels of probability as follows:

- **Most Probable Volume:** Given the current hydrometeorological conditions to date, this is the best estimate of what the actual runoff volume will be this season.
- **Most Probable Volume (% Normal):** Most probable volume in percent of the 1961-1990 average.
- **Reasonable Maximum Volume:** Given current hydrometeorological conditions, the seasonal runoff that has a 10 percent chance of being exceeded.
- **Reasonable Minimum Volume:** Given current hydrometeorological conditions, the seasonal runoff that has a 90 percent chance of being exceeded.

**SNOTEL:** Acronym for SNOw TELelemetry. This is a automated snow measurement system operated by the USDA - Natural Resources Conservation Service. These sites use meteor burst communications technology to transmit hydrometeorological information such as snow water equivalent from snow pillows, accumulated precipitation and maximum, minimum and average air temperature.

**Water equivalent:** The depth of water that would result from melting the snowpack at a point.

**Water Year:** The period from October 1<sup>st</sup> through September 30<sup>th</sup>.

## General Outlook

May 01, 2012

California had its share of precipitation and warm weather during April, with many high-altitude stations recording above normal precipitation and record high temperatures during the month. Near to above average snow pack conditions exist in the Upper Klamath, Scott, Trinity and some of the Upper Sacramento watersheds while packs in the southern Sierra are very low. Overall reservoir storage is still above average. Spring runoff forecasts continue to be influenced by the condition of the snow pack and seasonal precipitation received, with the Trinity/Upper Sacramento and Northern Sierra watersheds showing the best improvement from what began to be a disappointing start to this year's wet season. Other basins in California are expected to have much below average spring runoff.

Impacts such as low streamflows and water-stressed vegetation are already being felt in some watersheds in the East Side Sierra and central Nevada. Low snow packs is a major factor driving low water supply forecasts in the region this year.

**PRECIPITATION:** Precipitation ranged from average to much above average for the second month in a row in the Central Valley drainages. April precipitation was greatest in the Tulare Basin (245 percent), followed by watersheds in the Upper Sacramento (192 percent). Seasonal (October 31, 2011 to April 30, 2012) averages range from below to much below average for the region.

<u>Basin</u>	<u>Apr % of Avg Pcpn</u>	<u>WY % of Avg Pcpn</u>
Trinity	122	87
Upper Sacramento	192	83
Central Sierra	172	69
Southern Sierra	245	80
Walker	81	56
Carson	85	61
Truckee	112	71
Upper Klamath	112	94
Upper Humboldt	94	80
Lower Humboldt	79	74

**SNOWPACK:** The Trinity, Upper Sacramento and Scott River basins have the highest May 1<sup>st</sup> average, standing at 113, 113 and 94 percent, respectively. Percentages then drop down from the McCloud River basin (73 percent) to the Kern (7 percent). Snow packs are particularly dismal from the Pit River down to the Tulare River basin. Strong ridging during the third week of the month produced warm temperatures that accelerated snow melt.

<u>Basin</u>	<u>% of Avg Snowpack May 1, 2012</u>	<u>% of Avg Snowpack May 1, 2011</u>
Upr Sac/Nrn Sierra	50	202
San Joaquin Valley	27	189
Tulare Lake	13	182
Tahoe-Truckee	37	197
Carson-Walker	27	162
Humboldt	7	203
Upper Klamath	90	197

**RUNOFF:** April runoff was greatest in basins in the Central Valley region. It was particularly dismal in the Humboldt River basin in Nevada. Seasonal runoff stands at below to much below average.

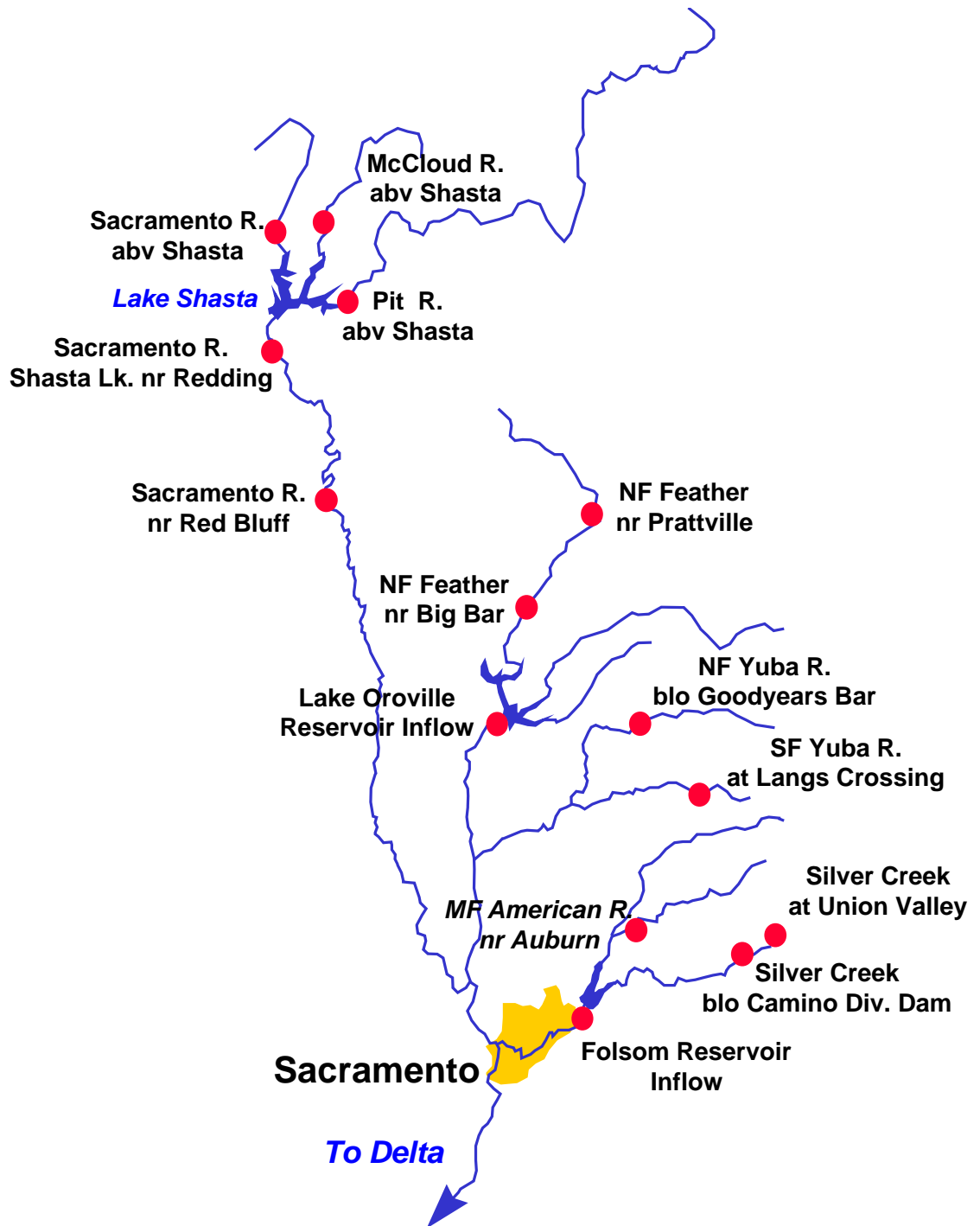
<u>Basin</u>	<u>Apr % of Avg Runoff</u>	<u>WY % of Avg Runoff</u>
Trinity-Sacramento	125	63
San Joaquin	103	57
Tulare Lake	91	71
East Side Sierra	85	72
Humboldt	27	44
Upper Klamath	82	64

**RESERVOIR STORAGE:** Most of California's major reservoirs continue to record average to above average storage thanks largely to carryover storage from last year. The state's two largest reservoirs, Shasta Lake and Lake Oroville, stand at 116 and 115 percent of average, respectively, as of the end of April. Stored water in the Sacramento region as of April 30 was at 115 percent of average for the date, the San Joaquin at 116, and the Tulare Lake at about 115 percent. East-side Sierra reservoirs were at 130 percent of average. The lake level at Lake Tahoe stood at 6227.42 feet (or 4.42 feet above its natural rim altitude of 6223.0 feet) as of April 30. Usable storage was 538,200 acre-feet or 134 percent of average. It was 369,700 acre-feet (92 percent of average) at about this time last year. Storage at Lahontan Reservoir in Nevada stands at 89 percent of average as of April 30 while Rye Patch Reservoir is at 111 percent. Storage at Upper Klamath Lake is about 102 percent of average.

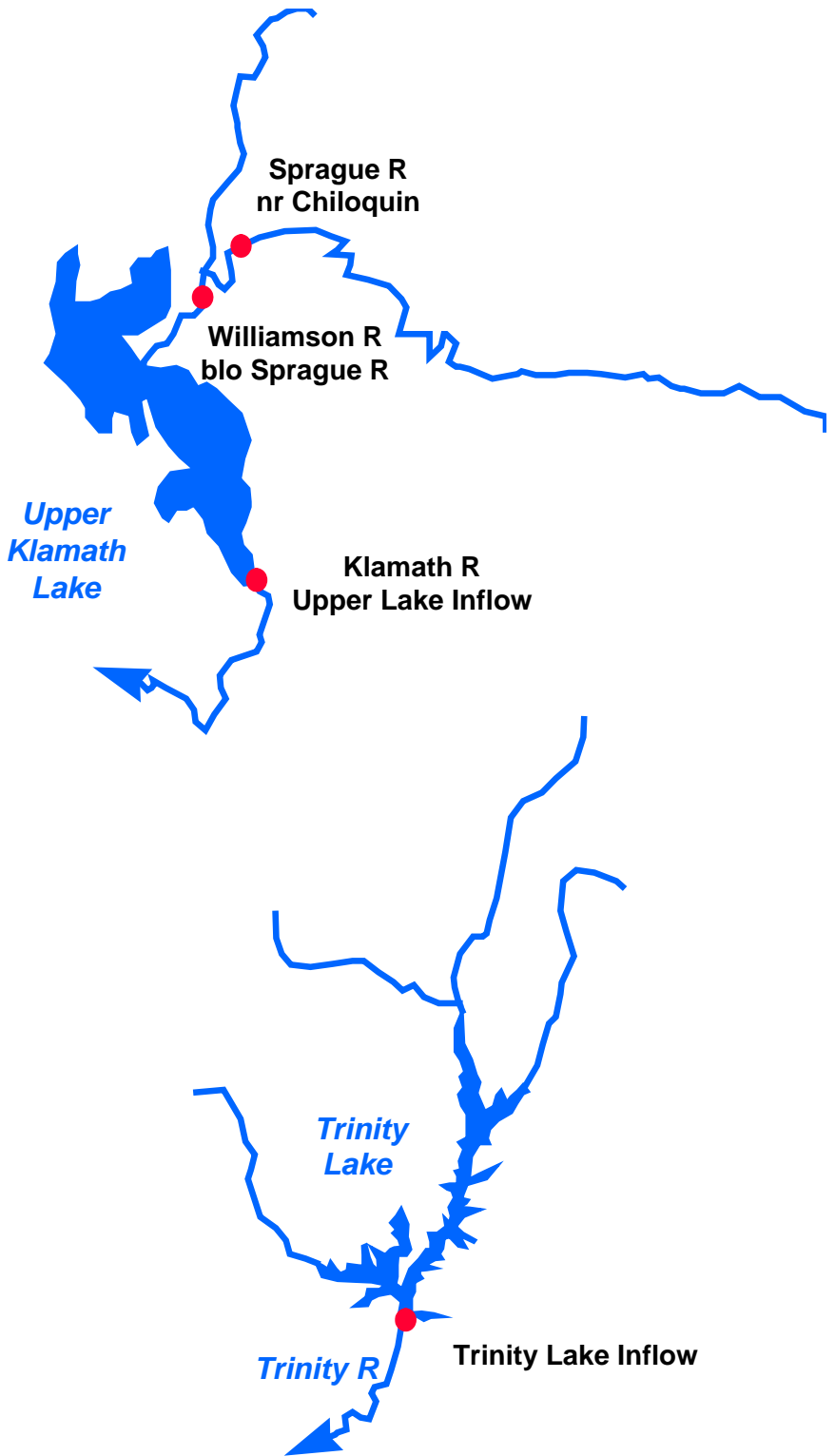
**FORECASTS:** Median April through July runoff forecasts vary from 133 to 82 percent of average (1971-2000) from the Scott River basin to the American and 60 to 44 percent from the Mokelumne River basin to the Kern. Projections range from 25 to 56 percent for the east side Sierra Nevada watersheds and 10 to 23 percent for forecast points on the main stem Humboldt River. The May through September forecast for the Upper Klamath Lake inflow is 94 percent.

Mid-month updates are scheduled for selected east side Sierra Nevada forecast points and the Upper Klamath Lake Inflow. These will be posted on the CNRFC web page. This will be the last Water Supply Outlook for Water Year 2012.

# Sacramento River Basin



# Upper Klamath and Trinity River Basins



# Water Supply Forecasts

## COASTAL BASINS

		Most Prob Vol KAF	Most Prob Vol %Norm	Reas Max Vol KAF	Reas Min Vol KAF	30 Year Avg KAF
Williamson River Sprague, blo	May-Sep	250	94	300	200	267
Sprague River Chiloquin, nr	May-Sep	140	90	190	90	155
Upper Klamath Falls River Inflow	May-Sep	320	94	415	225	340
Lost River Gerber Reservoir Inflow	May-Jul	4.4	69	14.5	0.20	6.4
Clear Lake Reservoir Inflow	May-Jul	16.0	83	33	0.80	19.3
Scott River Fort Jones, nr	Apr-Jul	240	133	280	210	181
Trinity River Trinity Lake	Apr-Jul	720	113	790	680	635

### Trinity River - Inflow at Lewiston Lake Distribution (kAF) Exceedence

Probability	Oct-Apr	May	Jun	Jul	Aug	Sep	Apr-Jul	Water Yr
90%	677	210	105	50	15	5	680	1085
50%	677	240	130	42	21	15	720	1125
10%	677	280	150	30	25	20	790	1195

## SACRAMENTO RIVER BASIN

		Most Prob Vol KAF	Most Prob Vol %Norm	Reas Max Vol KAF	Reas Min Vol KAF	30 Year Avg KAF
Pit River Montgomery Ck, nr	Apr-Jul	830	88	915	720	940**
Mccloud River Shasta Lske, abv	Apr-Jul	390	105	445	340	370
Sacramento River Delta	Apr-Jul	330	114	390	270	290
Shasta Dam	Apr-Jul	1660	93	2060	1420	1790
Bend Bridge, abv, Red Bluff, nr	Apr-Jul	2200	90	2700	1930	2440

# Water Supply Forecasts

		Most Prob Vol KAF	Most Prob Vol %Norm	Reas Max Vol KAF	Reas Min Vol KAF	30 Year Avg KAF
<b>FEATHER RIVER ABOVE OROVILLE RESERVOIR</b>						
North Fork Feather River						
Prattville, nr	Apr-Jul	260	78	320	220	333*
Big Bar	Apr-Jul	790	82	980	720	962*
Feather River						
Oroville Dam	Apr-Jul	1410	80	1780	1280	1760
<b>YUBA RIVER ABOVE SMARTVILLE</b>						
North Yuba River						
Goodyears Bar, blo	Apr-Jul	255	93	310	220	273*
South Yuba River						
Langs Crossing	Apr-Jul	200	89	250	170	225*
Yuba River						
Englebright Reservoir	Apr-Jul	860	86	1040	720	995
<b>AMERICAN RIVER ABOVE FOLSOM RESERVOIR</b>						
Middle Fork American River						
Auburn, nr	Apr-Jul	400	82	520	350	490*
Silver Creek						
Union Valley	Apr-Jul	80	82	100	65	98*
Camino Dam, blo	Apr-Jul	130	82	160	110	158*
American River						
Folsom Reservoir	Apr-Jul	1010	82	1280	870	1230

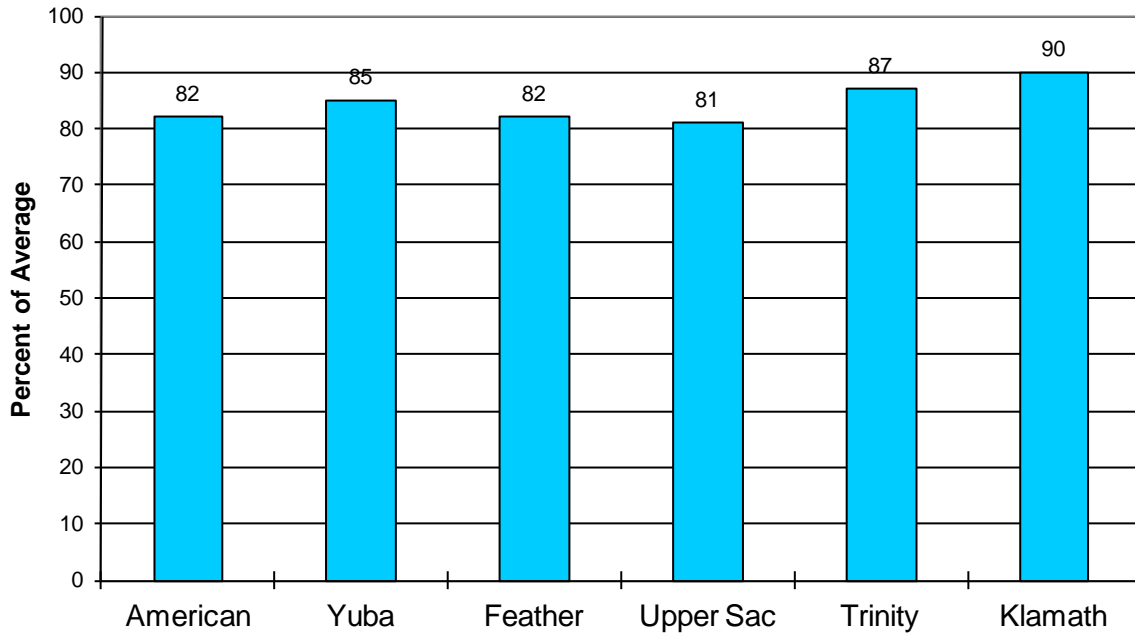
\*30 Year Averages for 1971-2000 are incomplete. Those forecast points with an asterisk have incomplete averages, so 1961-1990 averages are listed. The new averages will be incorporated into this report when the complete data sets become available.

\*\* Pit River 30-year average is full natural flow.

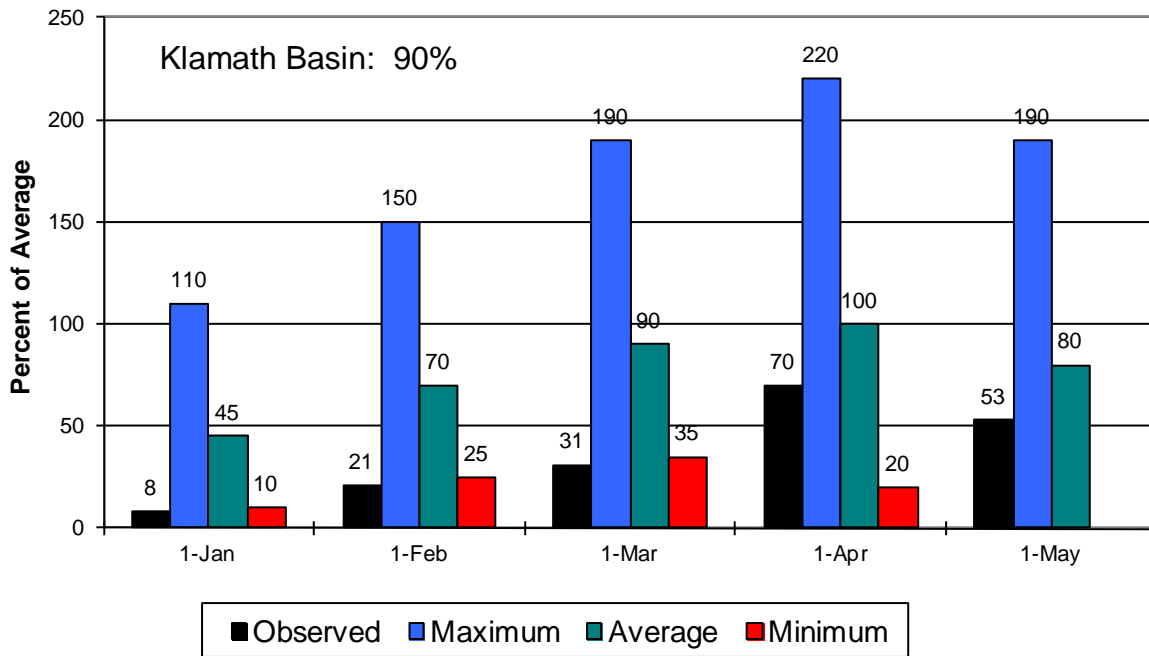


# Sacramento/Trinity/Klamath River Basins

## Seasonal Basin Precipitation October 1 to Date

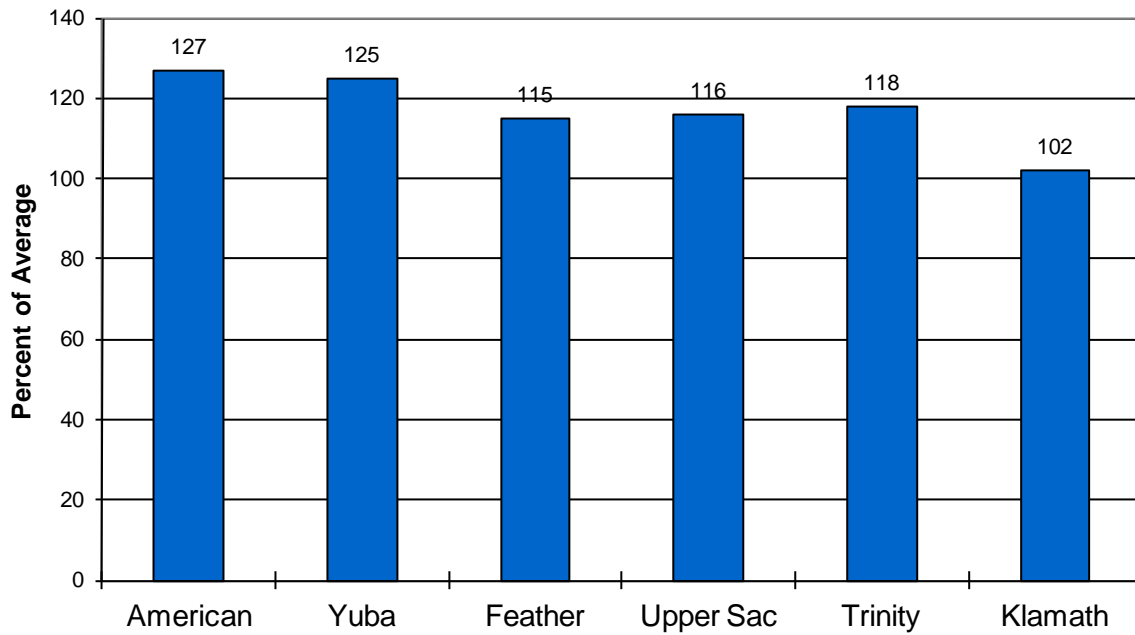


## Seasonal Basin Snowpack Water Content in % of April 1 Average

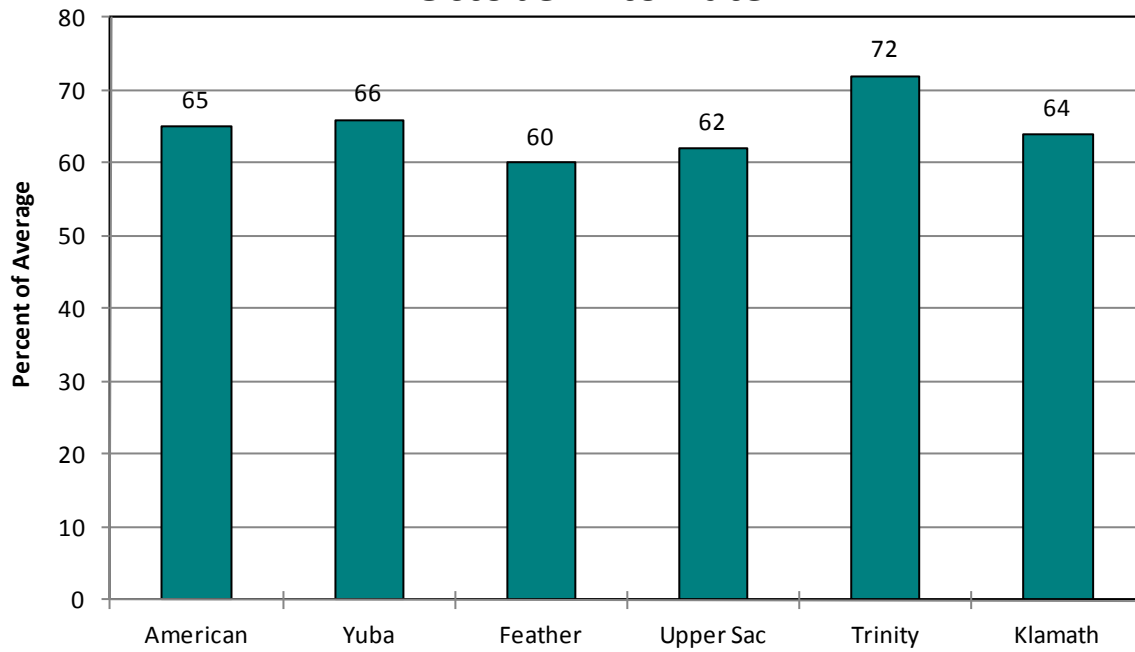


# Sacramento/Trinity/Klamath River Basins

## Basin Reservoir Storage Contents of Major Reservoirs in % of Average



## Seasonal Basin Runoff October 1 to Date



# San Joaquin Basin



# Water Supply Forecasts

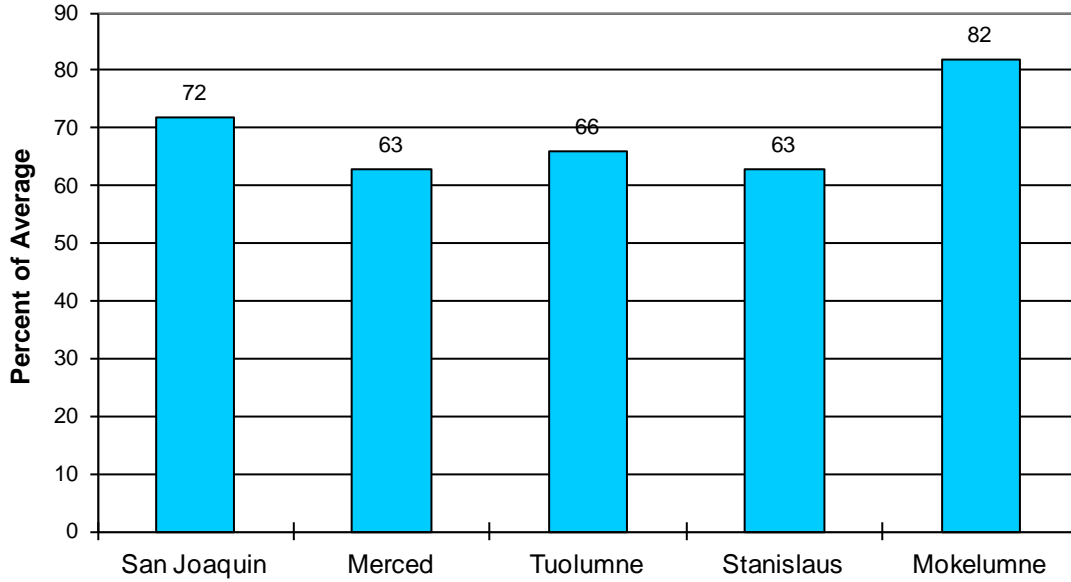
## SAN JOAQUIN BASIN

		Most Prob Vol KAF	Most Prob Vol %Norm	Reas Max Vol KAF	Reas Min Vol KAF	30 Year Avg KAF
<hr/>						
South Fork San Joaquin River						
Hooper Ck, blo, Florence Lk, nr	Apr-Jul	110	57	140	70	192*
San Joaquin River						
Millerton Lake	Apr-Jul	660	52	870	500	1270
Merced River						
Pohono Bridge, at, Yosemite, nr	Apr-Jul	210	58	260	160	360*
Merced Falls, blo	Apr-Jul	320	50	430	240	645
Tuolumne River						
Hetch Hetchy, nr	Apr-Jul	320	54	430	260	596*
La Grange, nr	Apr-Jul	630	51	850	480	1230
Middle Fork Stanislaus River						
Beardsley Dam, blo	Apr-Jul	190	59	240	140	320*
Stanislaus River						
New Melones Dam	Apr-Jul	400	58	500	300	695
North Fork Mokelumne River						
West Point	Apr-Jul	250	60	330	195	416*
Mokelumne River						
Pardee Reservoir	Apr-Jul	275	60	360	220	460
Cosumnes River						
Michigan Bar	Apr-Jul	110	89	135	90	123

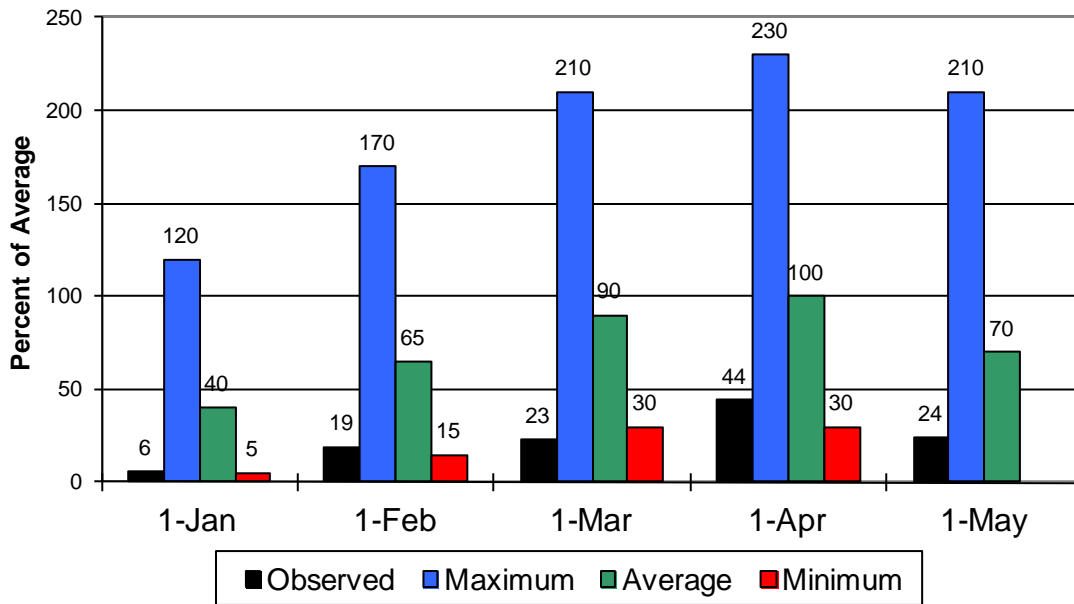
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# San Joaquin Basin

## Seasonal Basin Precipitation October 1 to Date

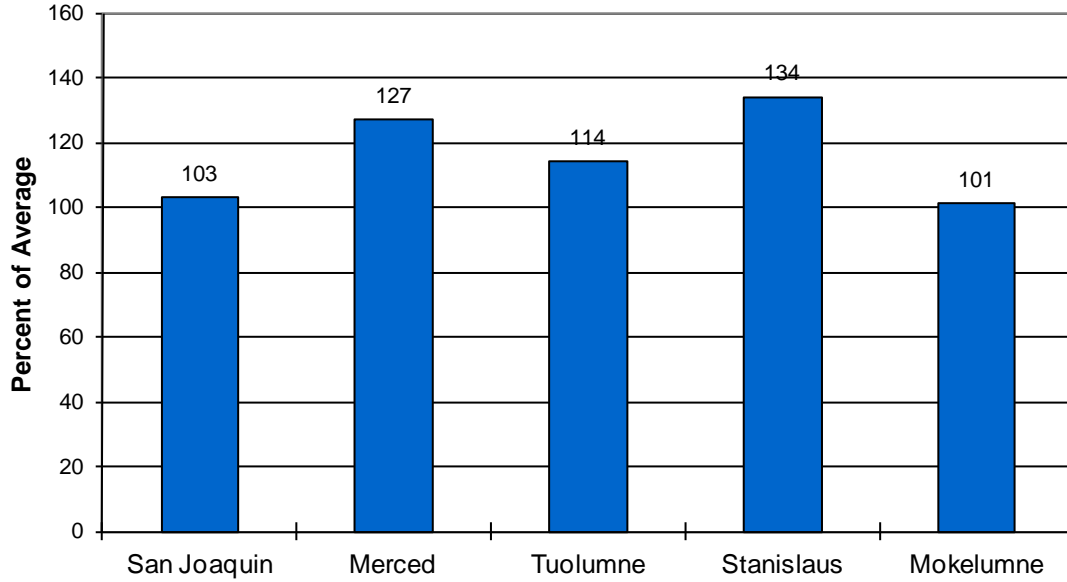


## Seasonal Basin Snowpack Water Content in % of April 1 Average

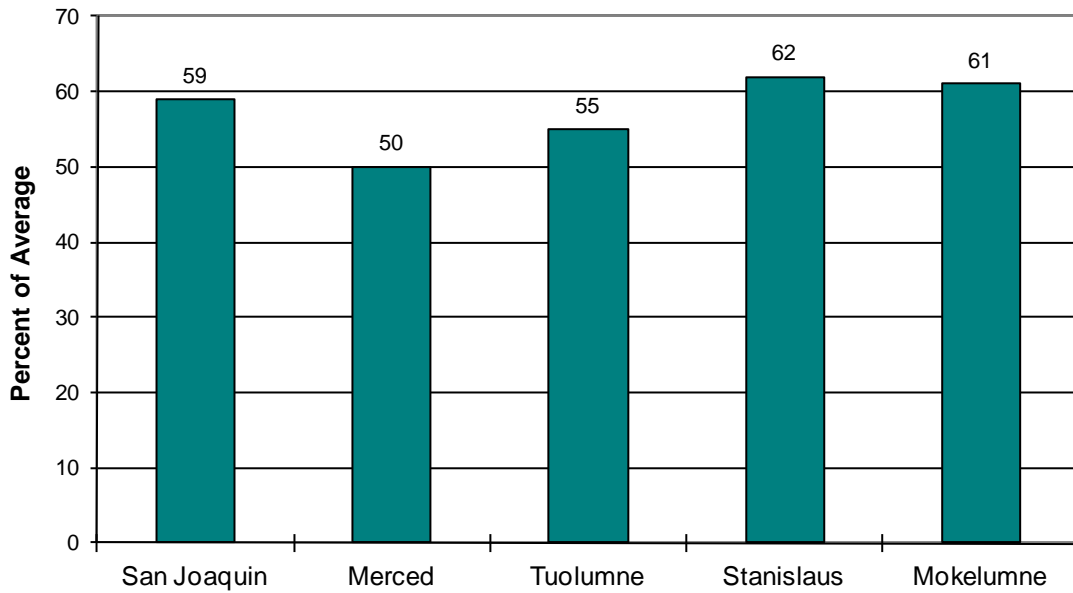


# San Joaquin Basin

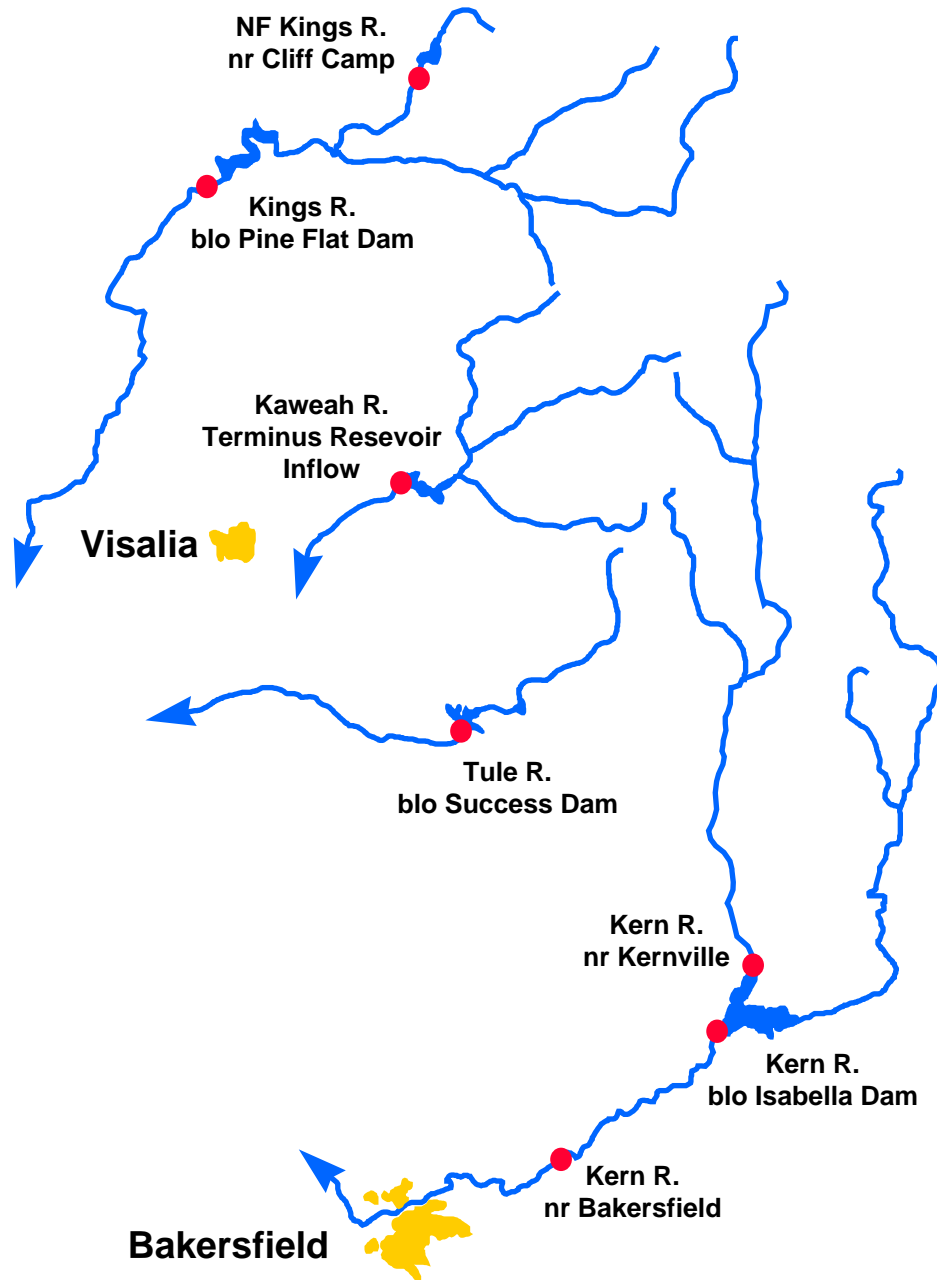
## Basin Reservoir Storage Contents of Major Reservoirs in % of Average



## Season Basin Runoff October 1 to Date



# Tulare Basin



# Water Supply Forecasts

## TULARE LAKE BASIN

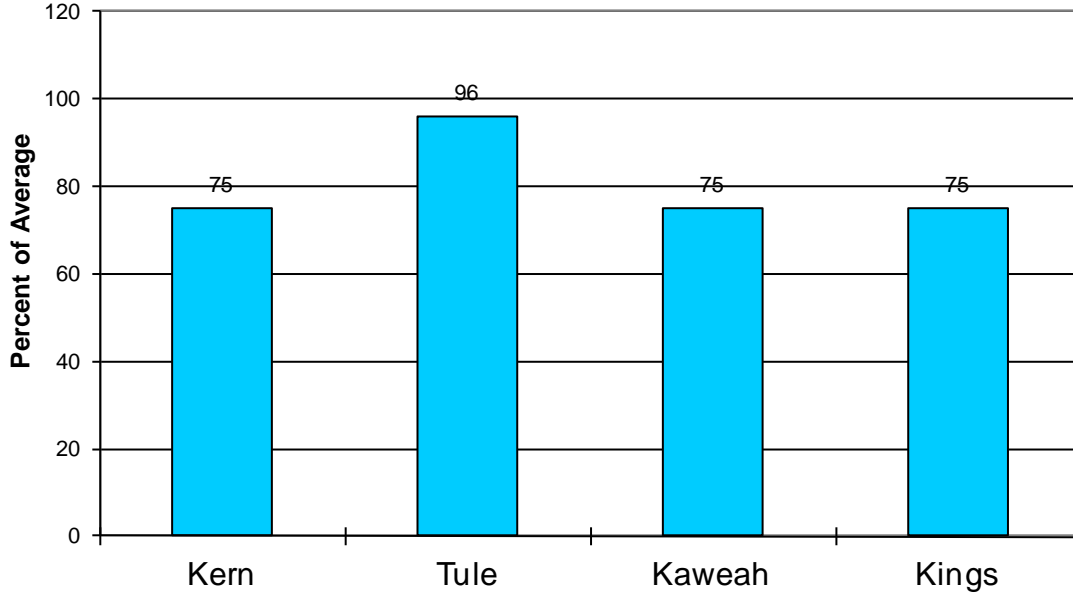
		Most Prob Vol KAF	Most Prob Vol %Norm	Reas Max Vol KAF	Reas Min Vol KAF	30 Year Avg KAF
<b>Kern River</b>						
Kernville, nr	Apr-Jul	180	45	270	140	398*
Isabella Dam, blo	Apr-Jul	210	44	310	170	480
Bakersfield, nr	Apr-Jul	210	43	300	160	490
<b>Tule River</b>						
Success Dam	Apr-Jul	45	68	60	35	66
<b>Kaweah River</b>						
Terminus Dam	Apr-Jul	160	55	200	110	290
<b>North Fork Kings River</b>						
Cliff Camp, nr	Apr-Jul	140	58	170	100	240*
<b>Kings River</b>						
Pine Flat Dam, blo	Apr-Jul	640	51	850	490	1250

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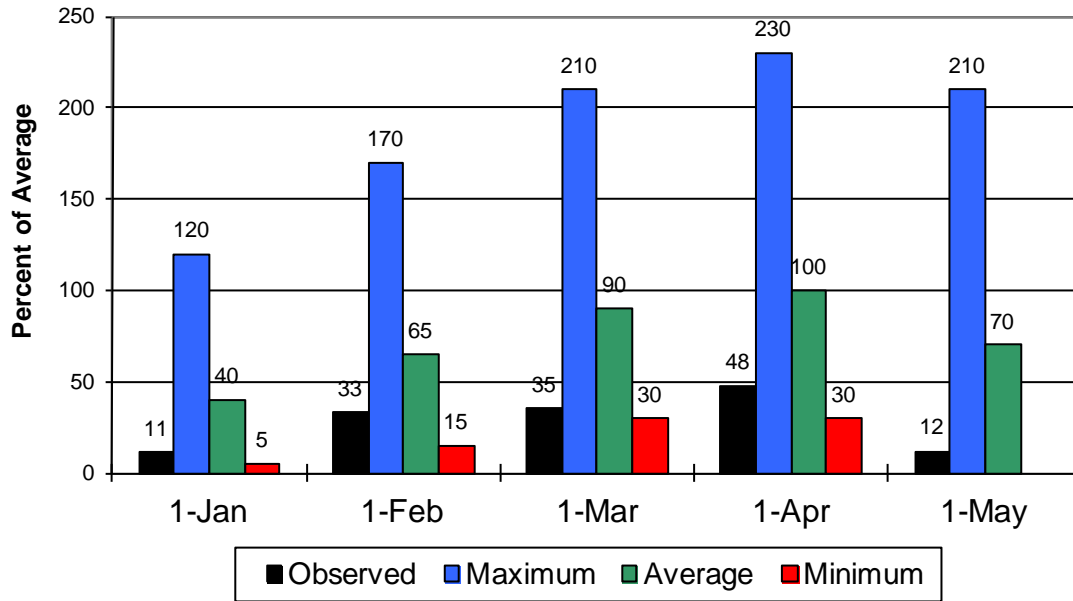


# Tulare Lake Basin

## Seasonal Precipitation October 1 to Date



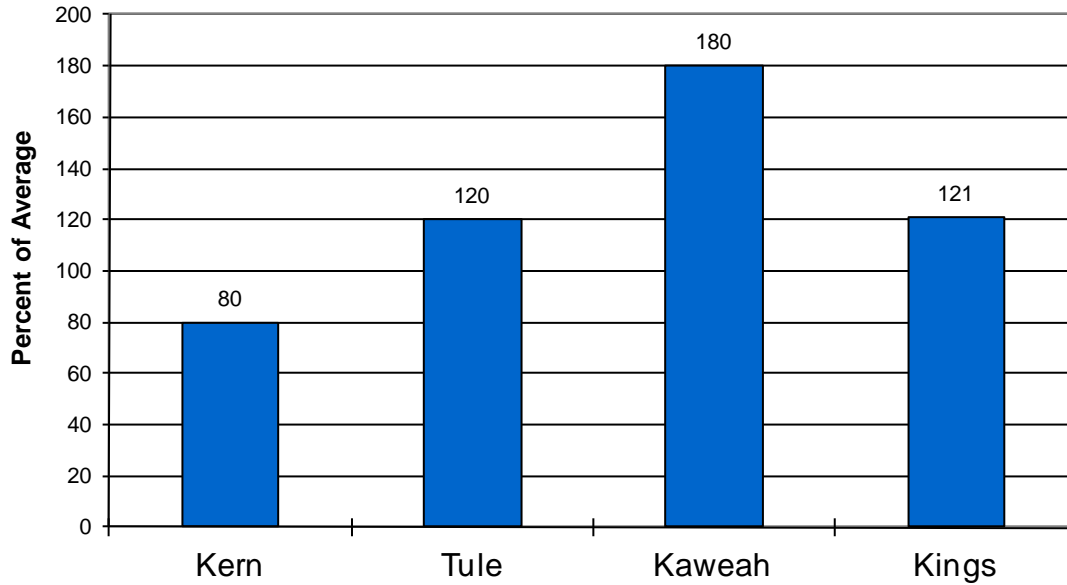
## Seasonal Basin Snowpack Water Content in % of April 1 Average



# Tulare Lake Basin

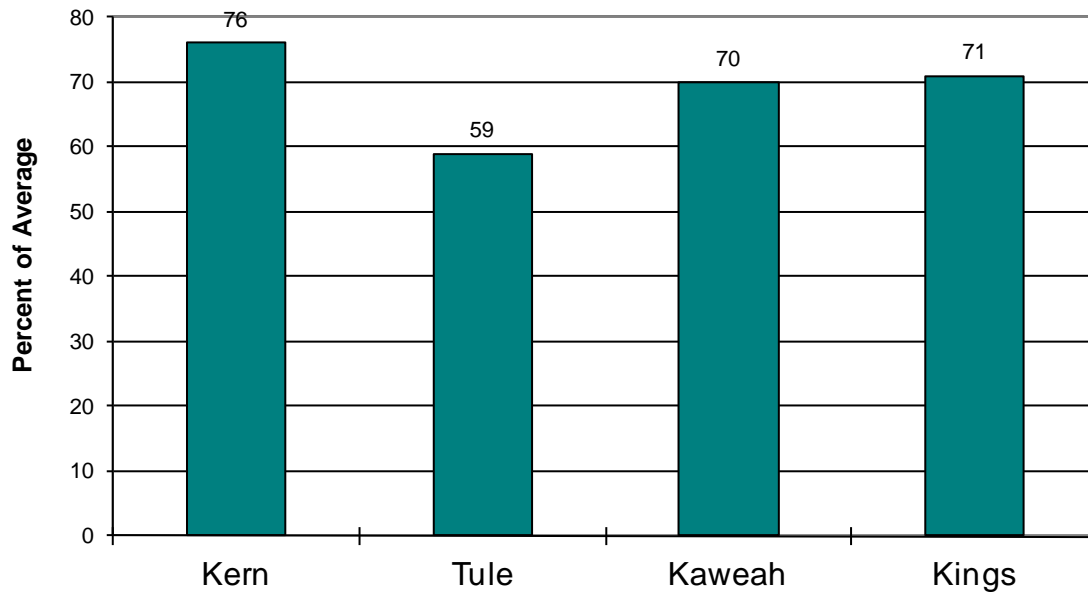
## Basin Reservoir Storage

Contents of Major Reservoirs in % of Average

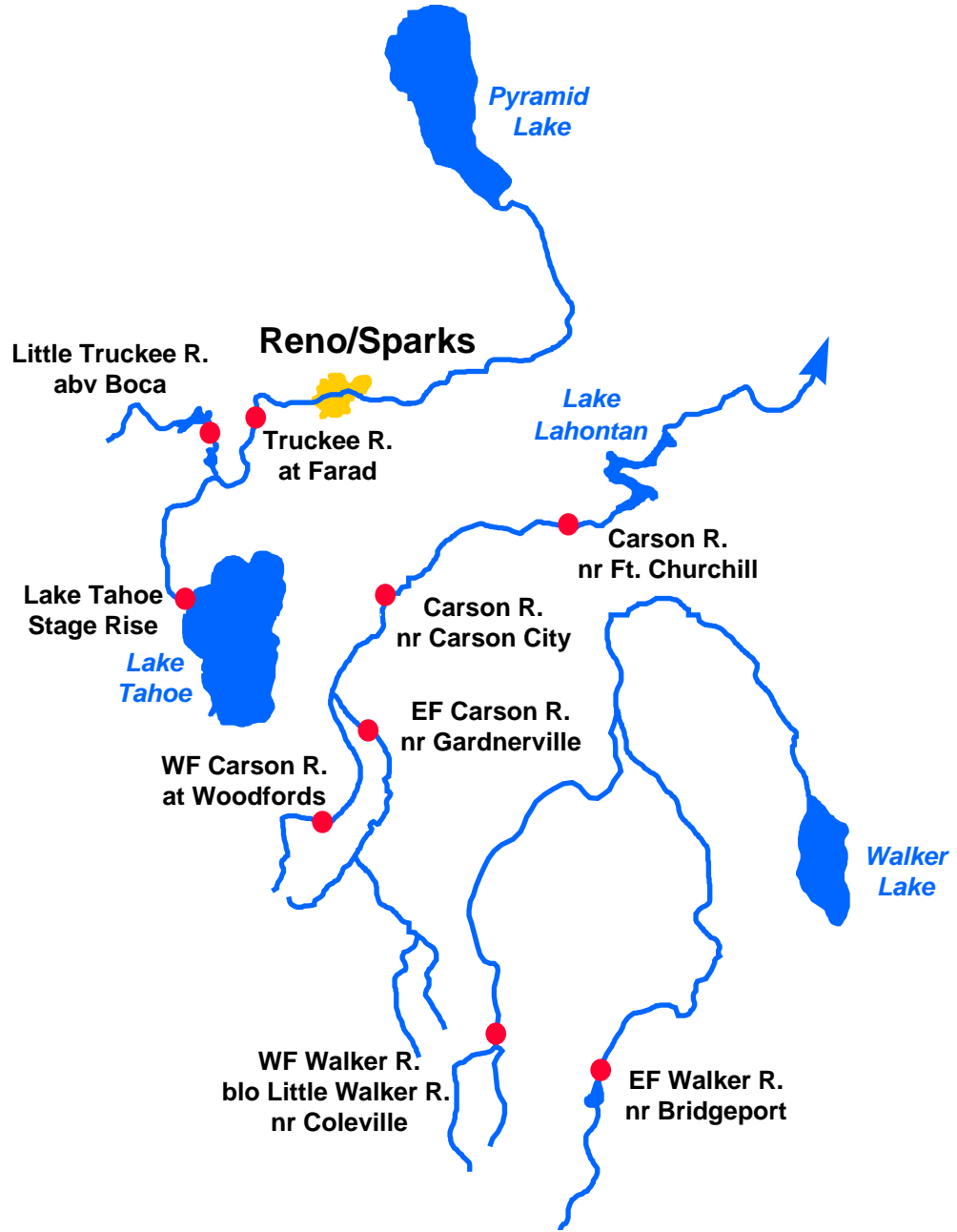


## Seasonal Basin Runoff

October 1 to Date



# East Side Sierra Nevada Basins



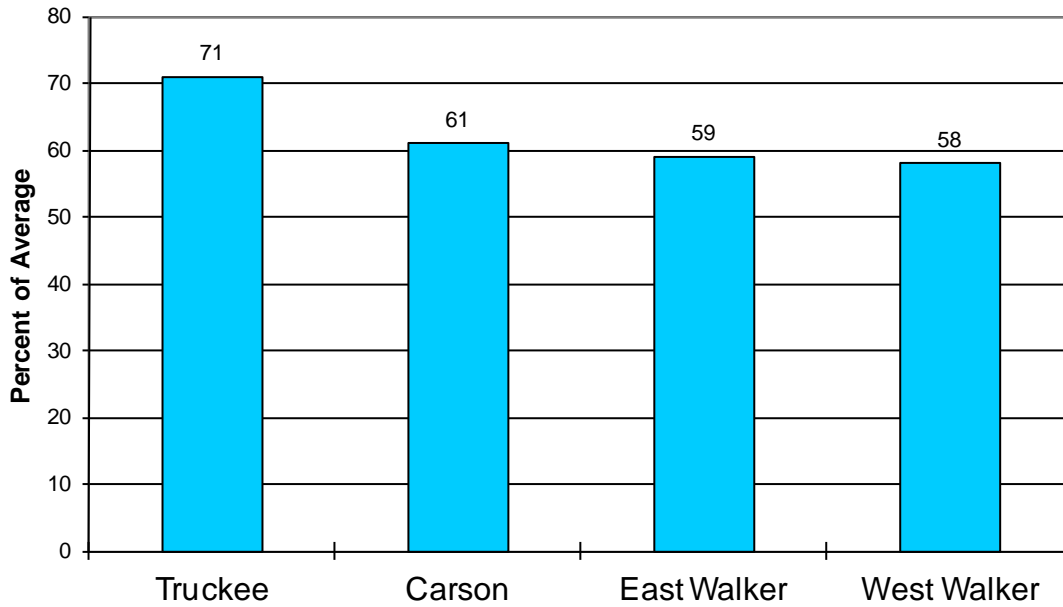
# Water Supply Forecasts

## EAST SIDE SIERRA NEVADA BASINS

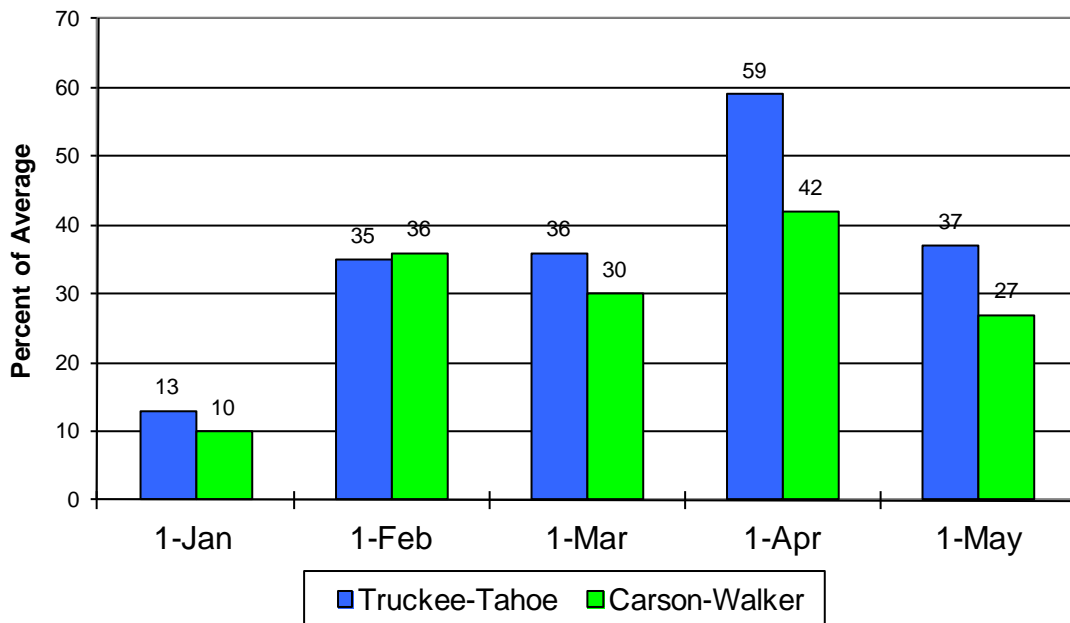
		Most Prob Vol KAF	Most Prob Vol %Norm	Reas Max Vol KAF	Reas Min Vol KAF	30 Year Avg KAF
<hr/>						
<b>Truckee River</b>						
Truckee River Lake Tahoe Stage Rise	Apr-High	0.65	47	0.96	0.35	1.38
Little Truckee River Stampede Dam	Apr-Jul	45	56	129	1.60	80
Truckee River Farad	Apr-Jul	135	52	205	63	260
<b>Carson River</b>						
East Fork Carson River Gardnerville, nr	Apr-Jul	85	45	145	25	189
West Fork Carson River Woodfords	Apr-Jul	26	46	40	12.2	56
Carson River Carson City, nr	Apr-Jul	50	27	72	33	188
Fort Churchill, nr	Apr-Jul	44	25	85	19.0	178
<b>Walker River</b>						
East Walker River Bridgeport, nr	Apr-Aug	25	37	75	0.70	67
West Walker River Ltl Walker, blo, Coleville, nr	Apr-Jul	69	44	99	39	156

# East Side Sierra Nevada Basins

## Seasonal Basin Precipitation October 1 to Date

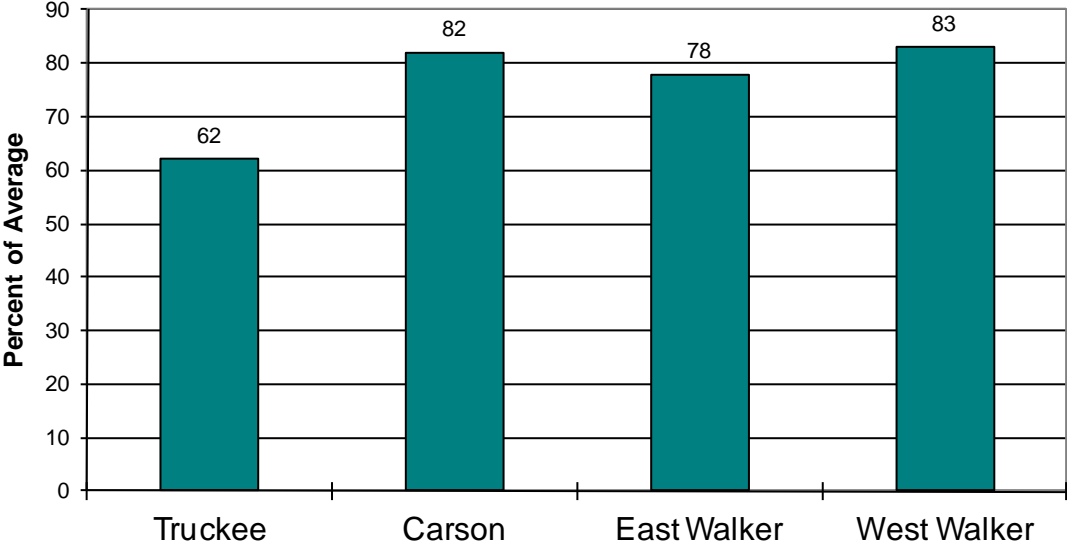


## Basin Snowpack % of Average SWE to Date

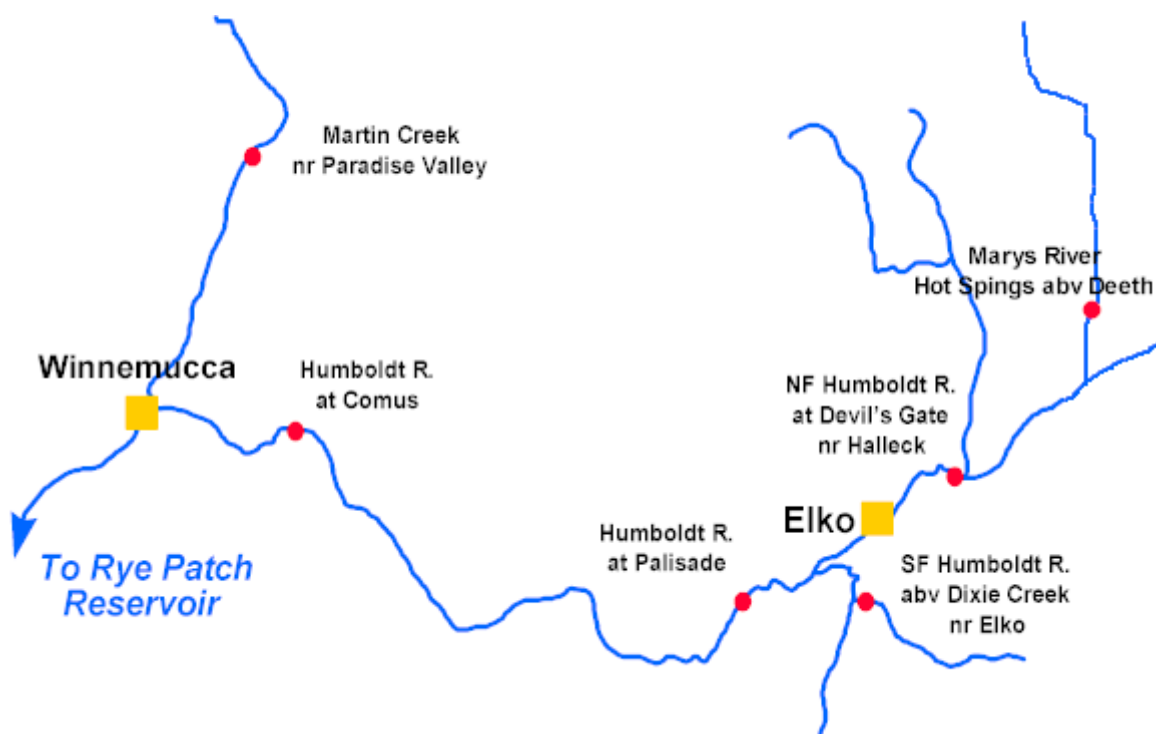


# East Side Sierra Nevada Basins

## Seasonal Basin Runoff October 1 to Date



# Humboldt River Basin



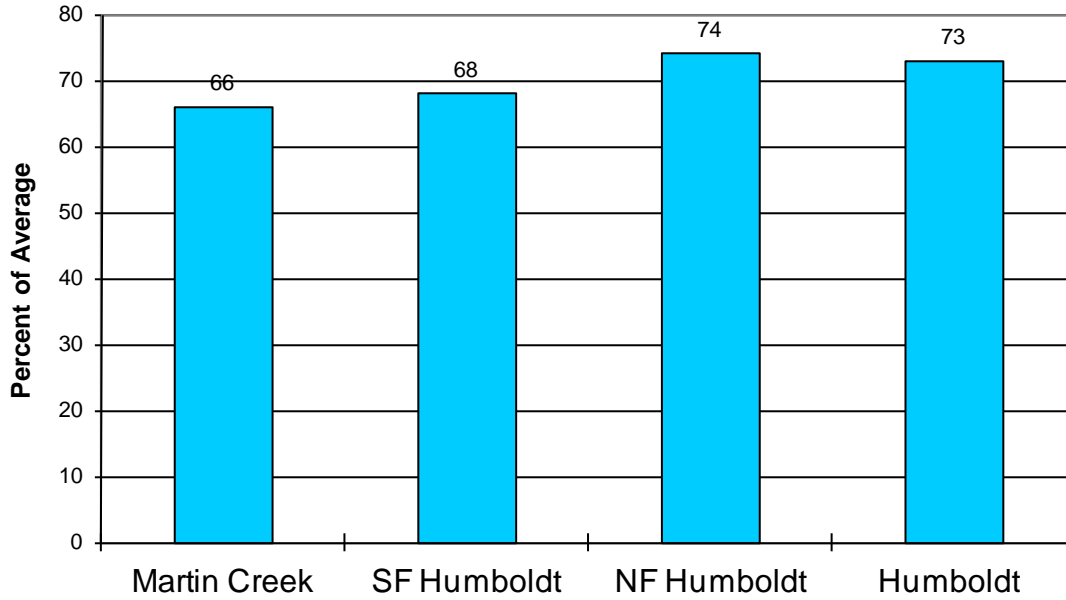
## Water Supply Forecasts

		Most Prob Vol KAF	Most Prob Vol %Norm	Reas Max Vol KAF	Reas Min Vol KAF	30 Year Avg KAF
<b>North Fork Humboldt River</b>						
Devils Gate, at, Halleck, nr	Apr-Jul	9.0	26	19.2	4.2	34*
<b>South Fork Humboldt River</b>						
Dixie Creek, abv, Elko, nr	Apr-Jul	14.0	18	38	1.50	76
<b>Marys River</b>						
Hot Springs, abv, Deeth, nr	Apr-Jul	13.0	33	35	0.40	39
<b>Humboldt River</b>						
Elko, nr	Apr-Jul	35	23	93	5.0	154
Palisade	Apr-Jul	50	20	138	5.0	250
Comus	Apr-Jul	32	14	120	2.0	225
Imlay, nr	Apr-Jul	19.0	10	144	2.0	188
<b>Martin Creek</b>						
Paradise Vslley, nr	Apr-Jul	5.8	31	14.0	2.5	18.7

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# Humboldt River Basin

## Seasonal Basin Precipitation October 1 to Date



## Basin Snowpack % of Average SWE to Date

