Water Supply Outlook

March
2003

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 1st through July 31st, unless otherwise noted.

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

April 1st Average: The April 1st 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 30th.

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 TELemetry. 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 1st through September 30th.

General Outlook

March 1, 2003

Prospects for a normal water supply year have diminished as the dry trend that began in January continued into February. Although substantial precipitation fell in Southern California during the month, the important water supply basins in the Sierra Nevada received less than average February rainfall. The Humboldt basin in Nevada also received below average monthly precipitation. This has resulted in a further downward revision of the forecasts from a month ago.

The Tulare basin received about 75 percent of average February precipitation. Monthly amounts then taper off dramatically with the San Joaquin basin receiving 58 percent, the Trinity 45 percent, the Klamath 41 percent, the American 38 percent and the Feather, 32 percent. The Carson and the Walker basins received 35 percent and the Truckee 30 percent. About 70 percent of the February average fell in the Humboldt basin.

There was no substantial accumulation to the high-altitude Sierra snow pack in February and the lower elevation pack experienced some melt. The March 1st average is about 101 percent in the northern Sierra basin, 78 percent in the central Sierra and 72 percent in the southern Sierras. The April 1st average stands at 91 percent for the northern Sierra, 69 percent for the central Sierra and 62 percent in the southern Sierra. Snow packs in the Carson-Walker basins are about 95 percent of the average-to-date, the Tahoe-Truckee at 88 percent and the Humboldt at about 58 percent. The upper Klamath snow pack is at 58 percent of the average-to-date.

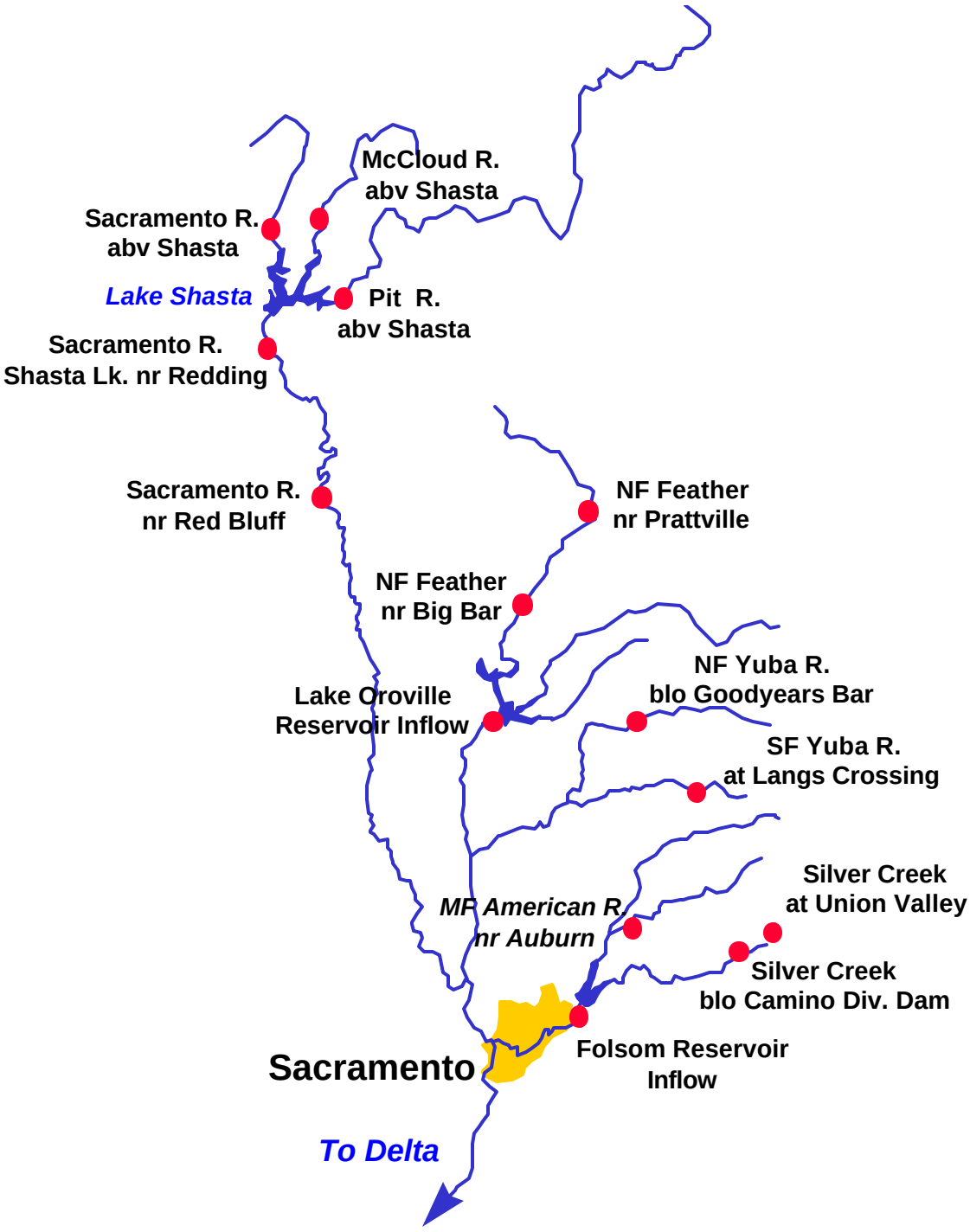
February runoff ranged from 78 percent in the Trinity to 39 percent in the Merced and Tule basins. Runoff for the east-side Sierra basins varied from 93 percent for the West Walker basin to 67 percent for the Carson.

Reservoir storage in the Sacramento basin was at 93 percent of average for the date, the San Joaquin at 100 percent, and the Tulare Lake basin at 73 percent. East-side Sierra reservoirs are at 42 percent of average. Storage at Lahontan Reservoir stands at 85 percent while Rye Patch Reservoir in Nevada is at only 19 percent of the average-to-date.

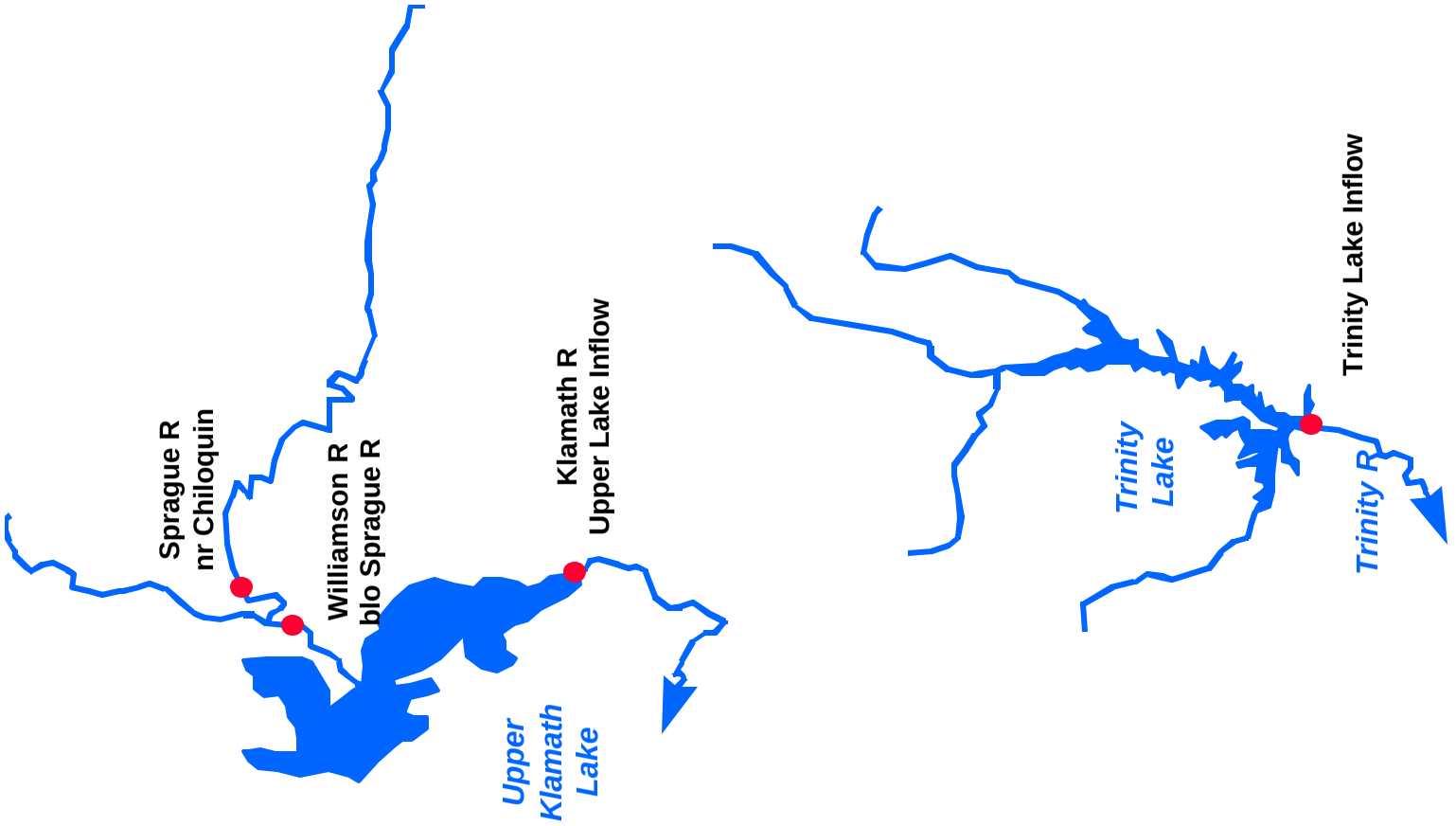
The April through July runoff forecasts range from 106 percent for the Trinity River inflow to 45 percent for the Tule river basin. Forecasts for the east-side Sierra basins vary from 62 to 93 percent. Forecasts for the Humboldt basin are especially dry, ranging from 24 to 46 percent. The March through September forecast for the upper Klamath inflow is 53 percent.

The Water Supply Outlook is available on the World Wide Web at http://www.wrh.noaa.gov/cnrfc.

Sacramento River Basin



Upper Klamath and Trinity River Basins



Water Supply Forecasts

		Most Prob Vol KAF	Most Prob Vol %Norm	Reas Max Vol KAF	Reas Min Vol KAF	30 Year Avg KAF
COASTAL BASINS						
Williamson River						
Sprague, blo	Mar-Sep	300	59	395	200	505
Sprague River						
Chiloquin, nr	Mar-Sep	150	49	205	90	305
Upper Klamath Falls River						
Inflow	Mar-Sep	380	53	435	320	715
Lost River						
Gerber Reservoir Inflow	Mar-Jul	9.0	24	15.9	2.0	37
Clear Lake Reservoir Inflow	Mar-Jul	15.0	19	22	8.0	80
Trinity River						
Trinity Lake Inflow	Apr-Jul	670	106	970	375	635
SACRAMENTO RIVER BASIN						
SACRAMENTO RIVER ABOVE BEND BRIDGE						
Pit River						
Montgomery Ck, nr	Apr-Jul	860	80	1130	595	1070
Mccloud River						
Shasta Lk, abv	Apr-Jul	360	97	485	235	370
Sacramento River						
Delta	Apr-Jul	270	93	395	145	290
Shasta Lake, Redding, nr	Apr-Jul	1550	87	2200	900	1790
Bend Bridge, abv, Red Bluff, n	Apr-Jul	2130	87	3110	1150	2440
FEATHER RIVER ABOVE OROVILLE RESERVOIR						
NF Feather River						
Prattville, nr	Apr-Jul	250	75	360	140	333*
Big Bar	Apr-Jul	780	81	1090	470	962*
Feather River						
Oroville Reservoir Inflow	Apr-Jul	1400	80	2110	700	1760

Water Supply Forecasts

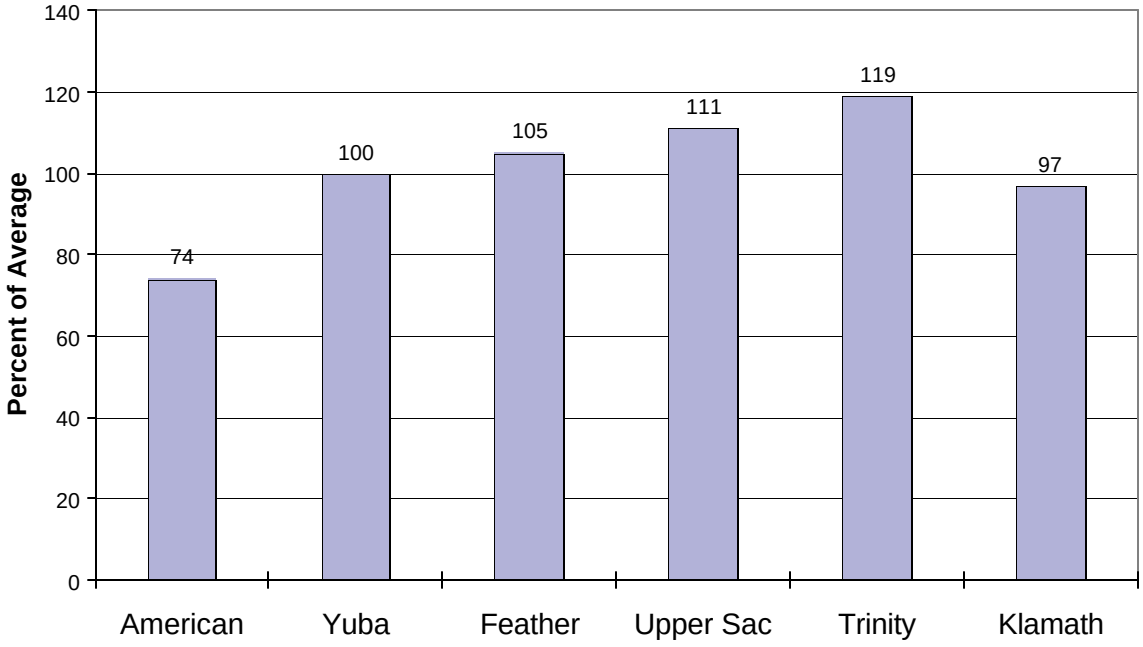
		Most Prob Vol KAF	Most Prob Vol %Norm	Reas Max Vol KAF	Reas Min Vol KAF	30 Year Avg KAF
Yuba River above Smartville						
North Yuba River						
Goodyears Bar, blo	Apr-Jul	220	81	330	112	273*
South Yuba River						
Langs Crossing	Apr-Jul	170	76	265	76	225*
Yuba River						
Smartville, nr	Apr-Jul	780	78	1180	385	995
American River above Folsom Reservoir						
MF American River						
Auburn, nr	Apr-Jul	360	74	600	125	490*
Silver Ck						
Union Valley	Apr-Jul	72	73	105	38	98*
Camino Dam, blo	Apr-Jul	113	72	185	42	158*
American River						
Folsom Reservoir Inflow	Apr-Jul	880	72	1430	350	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.**

Sacramento/Trinity/Klamath River Basins

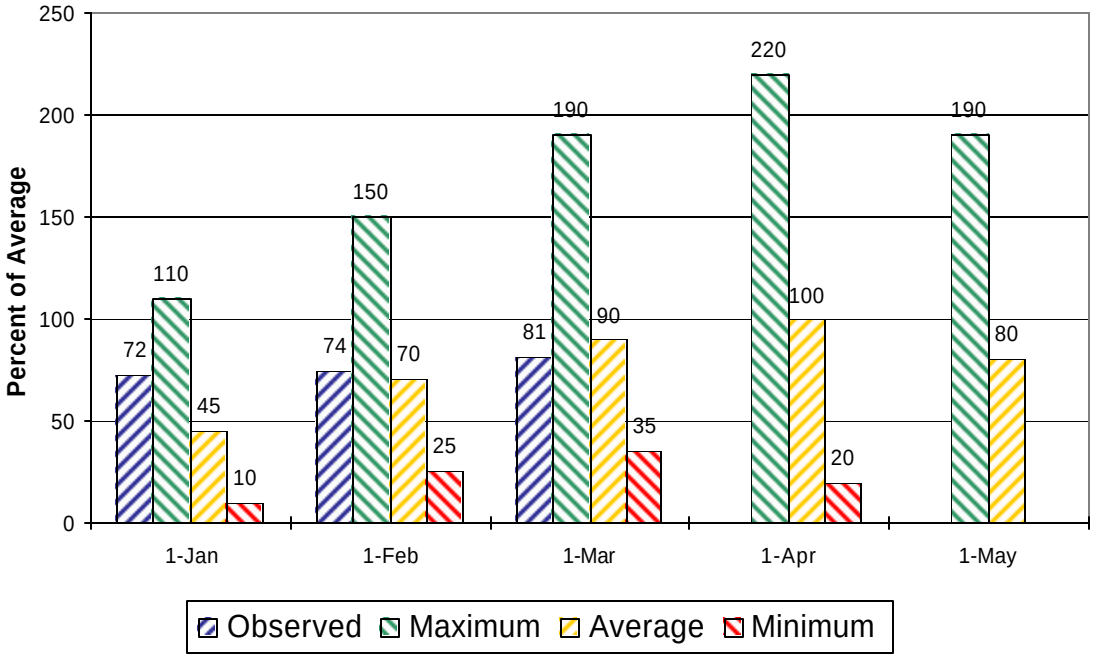
Seasonal Basin Precipitation

October 1 to Date



Seasonal Basin Snowpack

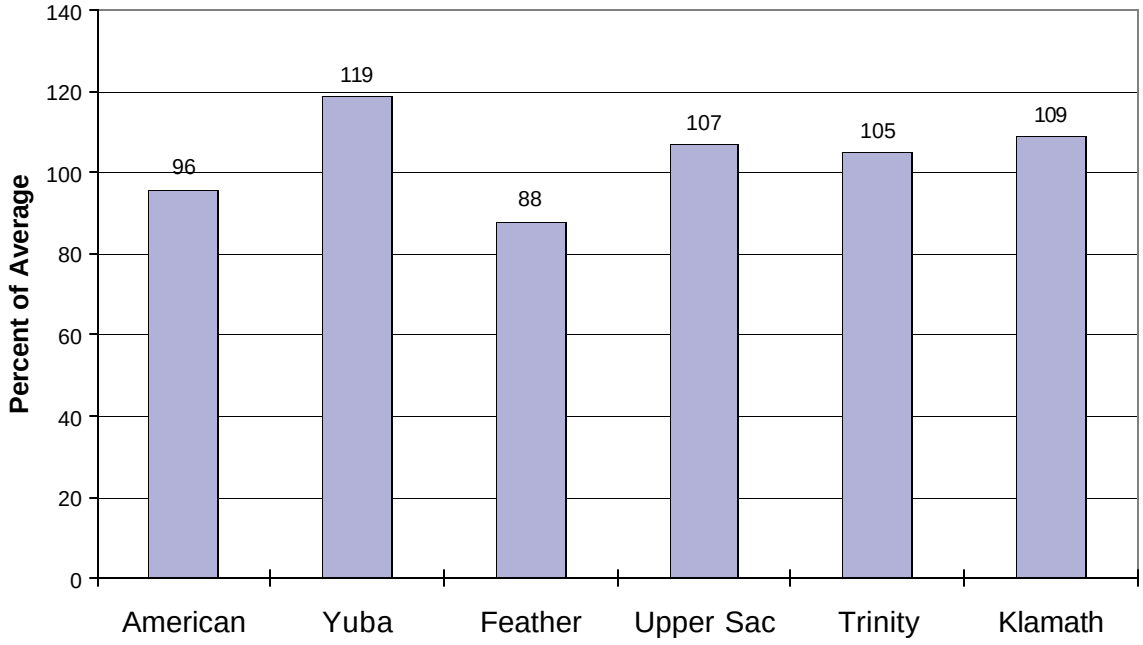
Water Content in % of April 1 Average



Sacramento/Trinity/Klamath River Basins

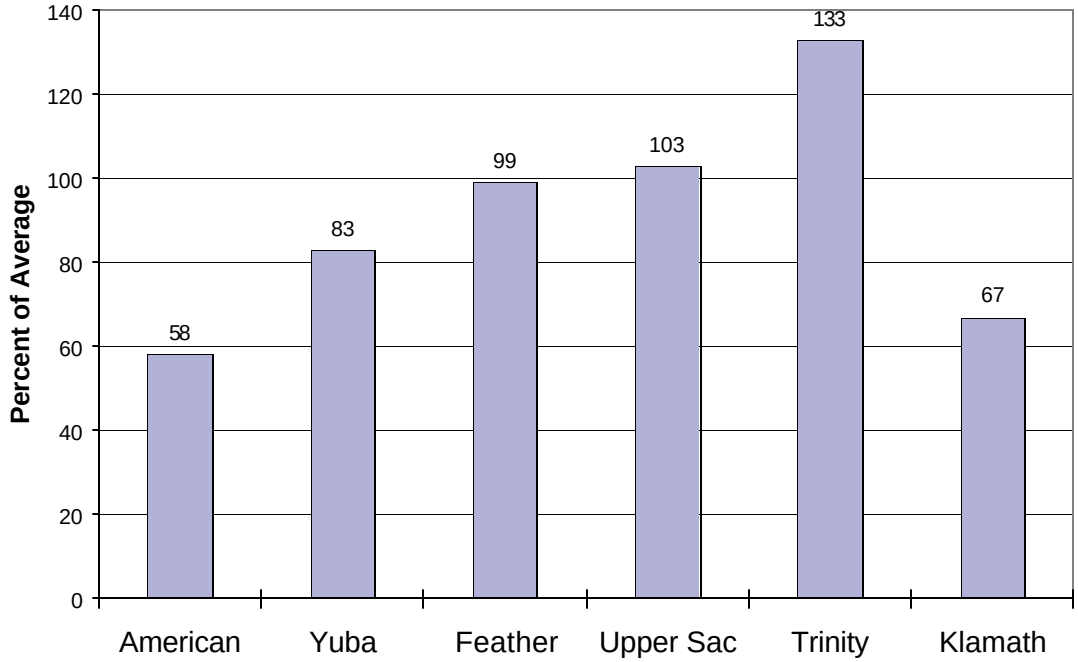
Basin Reservoir Storage

Contents of Major Reservoirs in % of Average



Seasonal Basin Runoff

October 1 to Date



San Joaquin Basin

Water Supply Forecasts

		Most Prob Vol KAF	Most Prob Vol %Norm	Reas Max Vol KAF	Reas Min Vol KAF	30 Year Avg KAF
SF San Joaquin River						
Hooper Ck, blo, Florence Lk, nr	Apr-Jul	150	78	240	70	192*
San Joaquin River						
Millerton Lk	Apr-Jul	930	73	1450	500	1270
Merced River						
Pohono Bridge, at, Yosemite, n	Apr-Jul	290	81	460	150	360*
Merced Falls, blo	Apr-Jul	450	70	720	250	645
Tuolumne River						
Hetch Hetchy, nr	Apr-Jul	480	81	700	240	596*
La Grange, nr	Apr-Jul	920	75	1400	550	1230
MF Stanislaus River						
Beardsley Dam, blo	Apr-Jul	240	75	400	120	320*
Stanislaus River						
Goodwin Dam, blo, Knights Ferry	Apr-Jul	510	73	800	250	695
NF Mokelumne River						
West Point	Apr-Jul	300	72	500	150	416*
Mokelumne River						
Mokelumne Hill	Apr-Jul	340	74	550	200	460
Cosumnes River						
Michigan Bar	Apr-Jul	60	49	130	20	123

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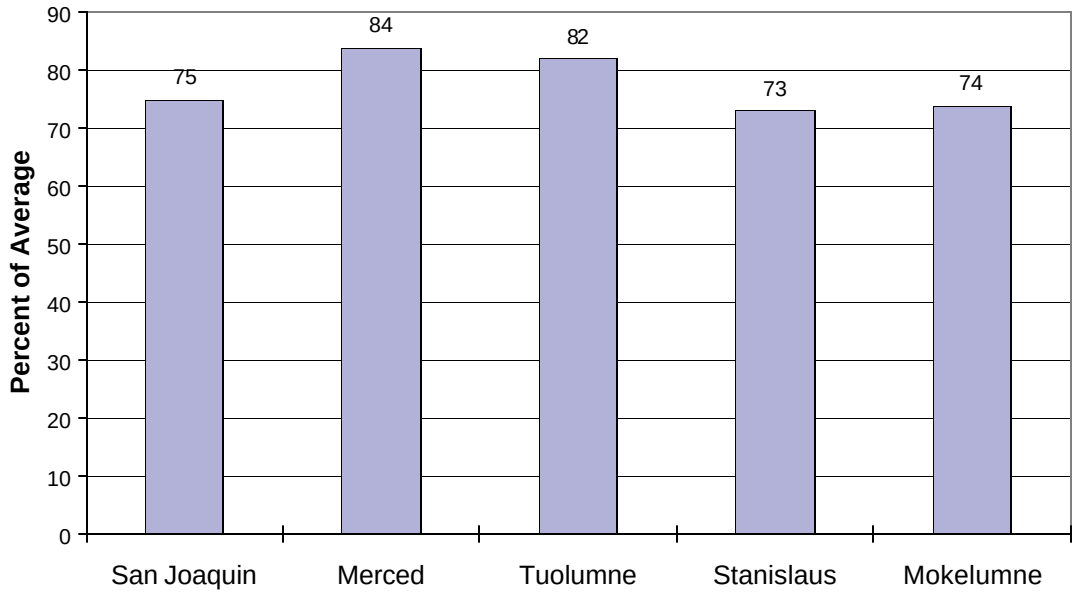
San Joaquin Basin

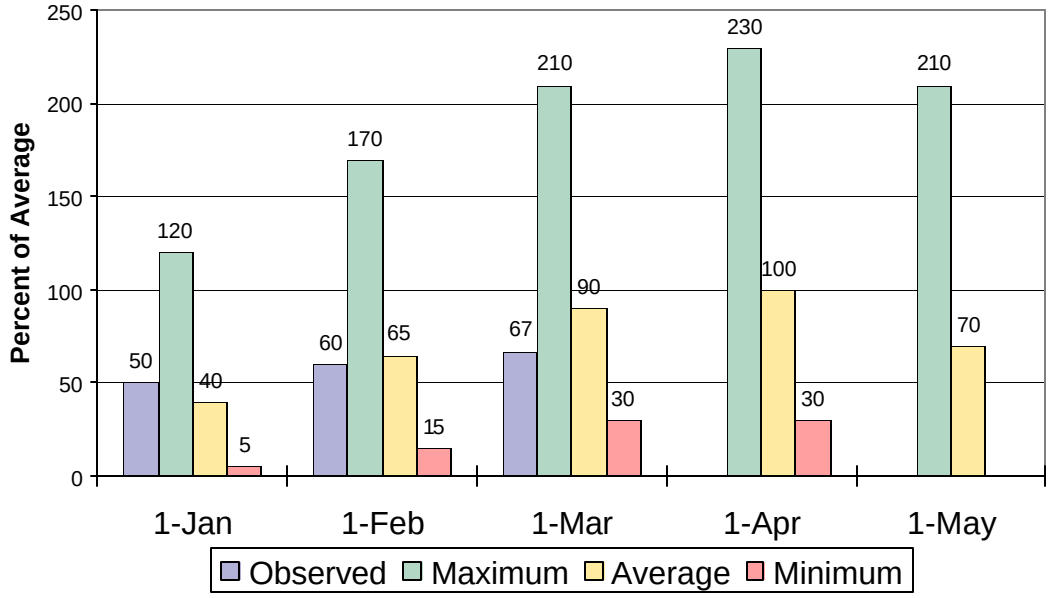
Seasonal Basin Precipitation

October 1 to Date



Seasonal Basin Snowpack

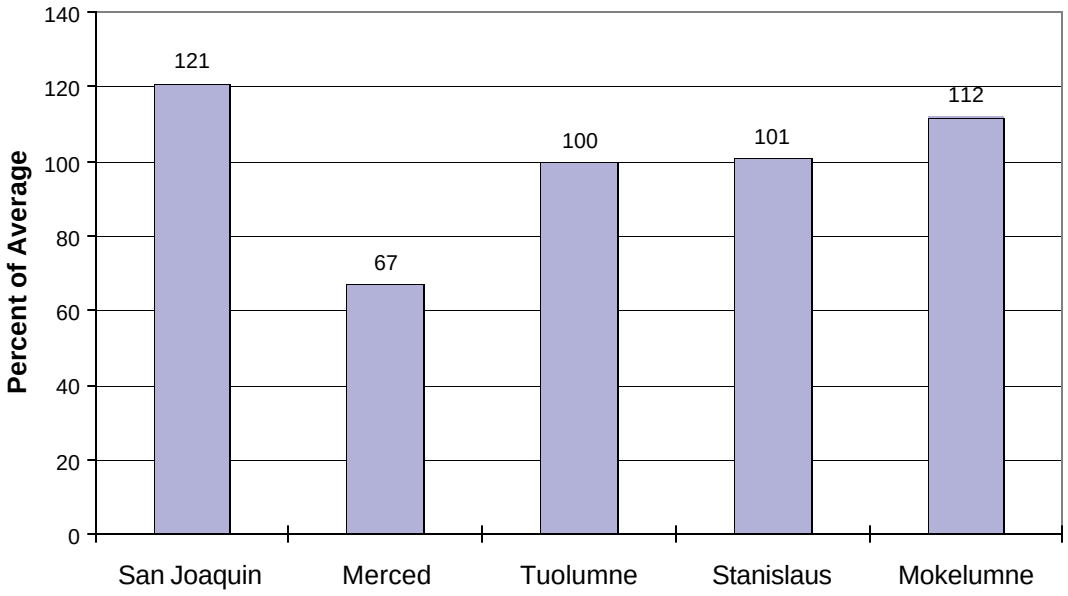
Water Content in % of April 1 Average



San Joaquin Basin

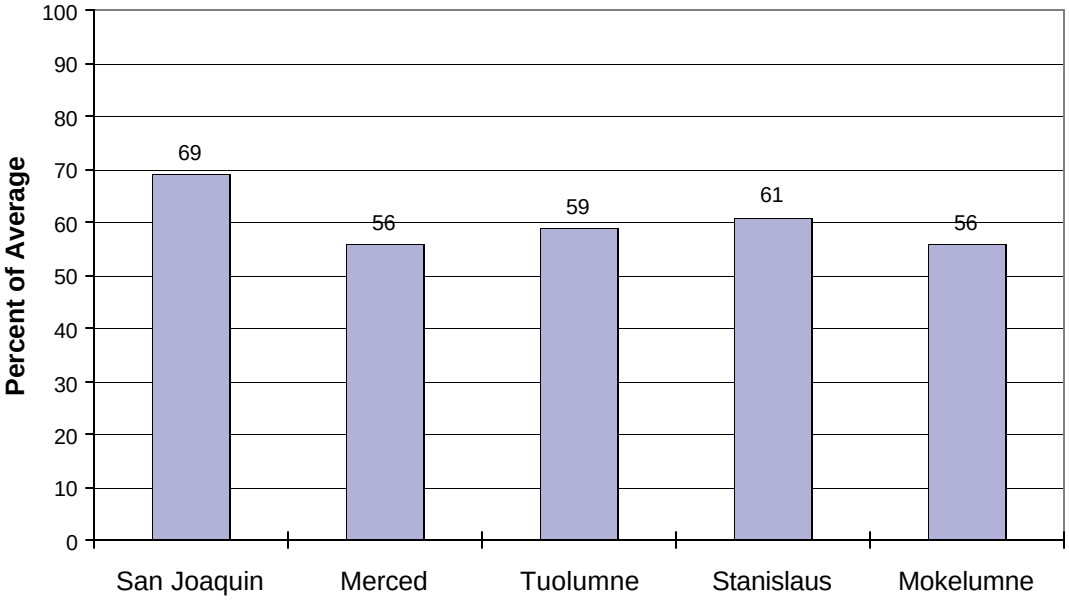
Basin Reservoir Storage

Contents of Major Reservoirs in % of Average

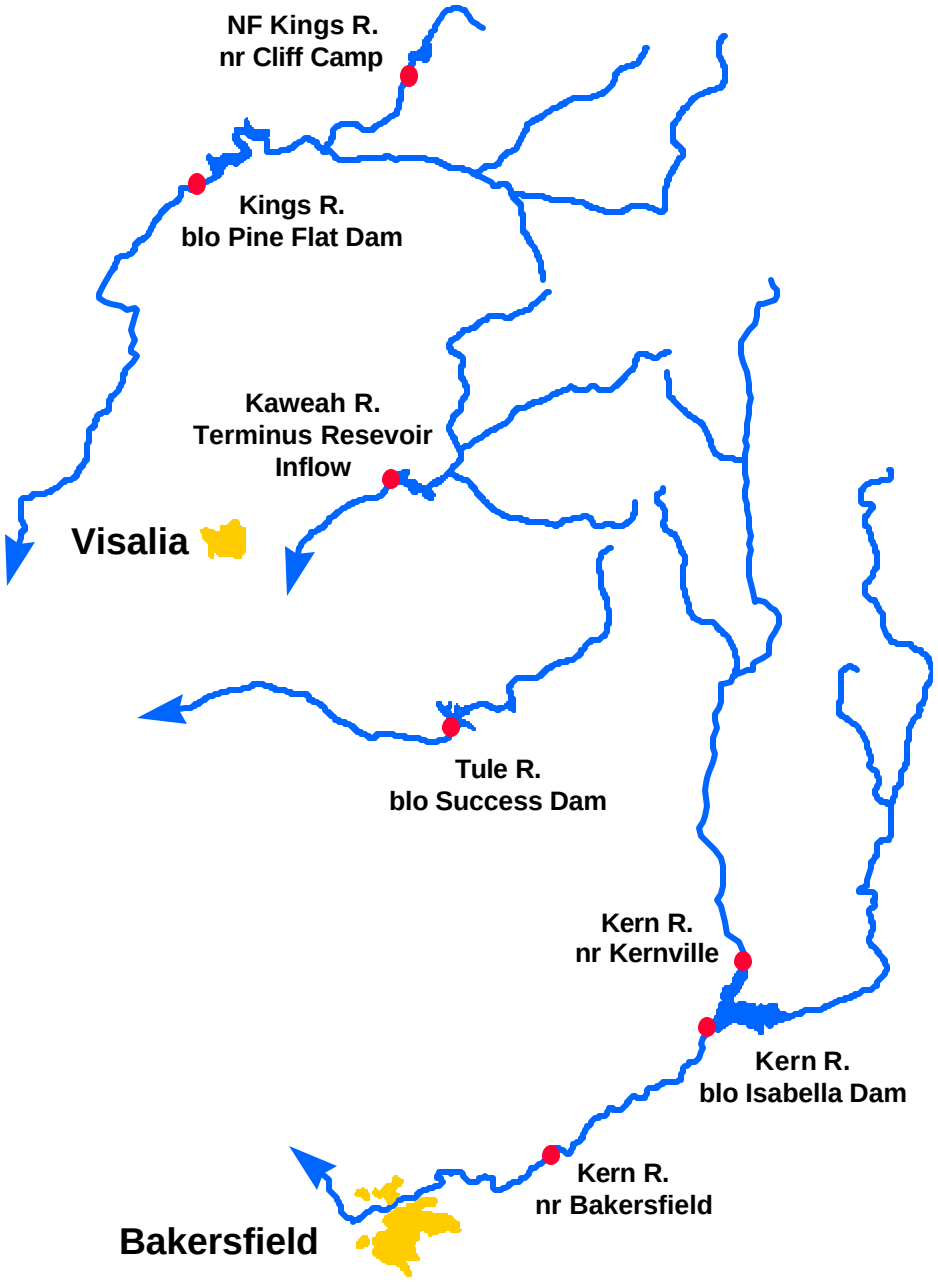


Season Basin Runoff

October 1 to Date



Tulare Basin



Water Supply Forecasts

		Most Prob Vol KAF	Most Prob Vol %Norm	Reas Max Vol KAF	Reas Min Vol KAF	30 Year Avg KAF
Kern River						
Kernville, nr	Apr-Jul	290	73	420	140	398*
Isabella Dam, blo	Apr-Jul	340	71	550	180	480
Bakersfield, nr	Apr-Jul	350	71	560	180	490
Tule River						
Success Dam	Apr-Jul	30	45	70	10	66
Kaweah River						
Terminus Dam	Apr-Jul	200	69	320	100	290
NF Kings River						
Cliff Camp, nr	Apr-Jul	170	71	260	100	240*
Kings River						
Pine Flat Dam, blo	Apr-Jul	900	72	1300	560	1250

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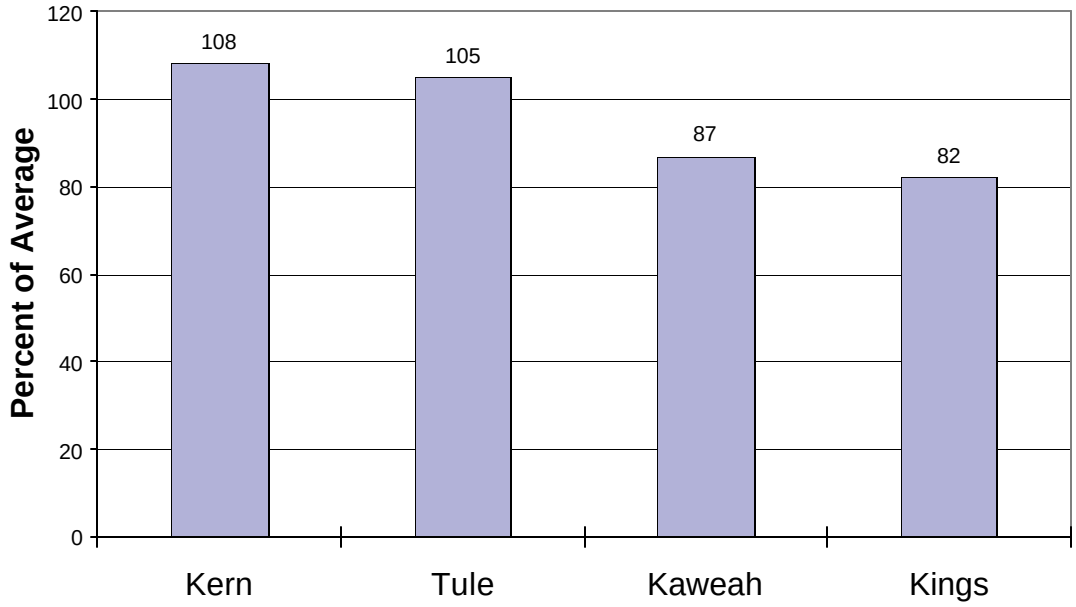
Tulare Lake Basin

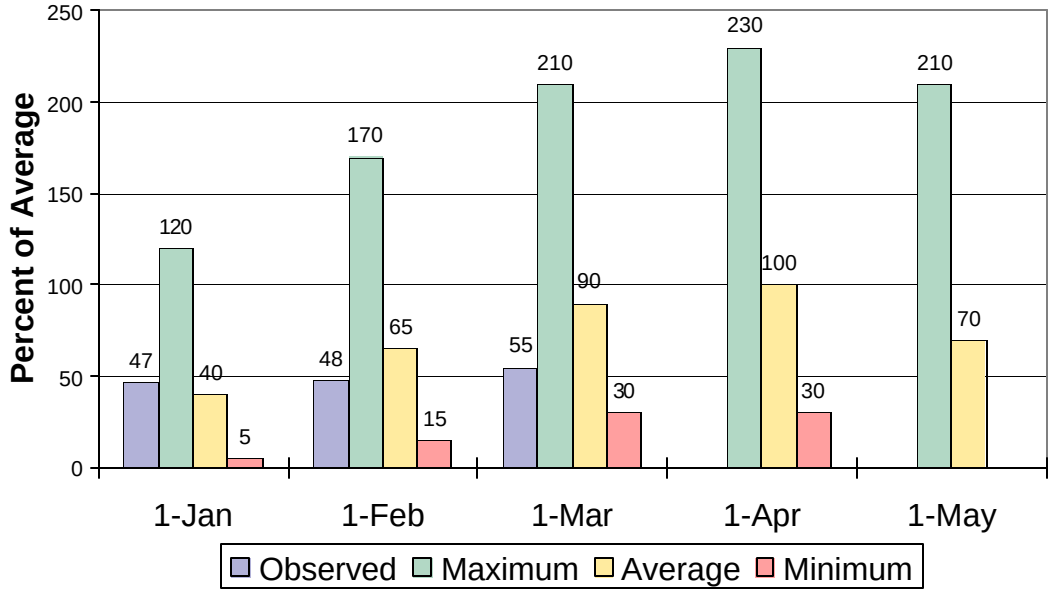
Seasonal Precipitation

October 1 to Date



Seasonal Basin Snowpack

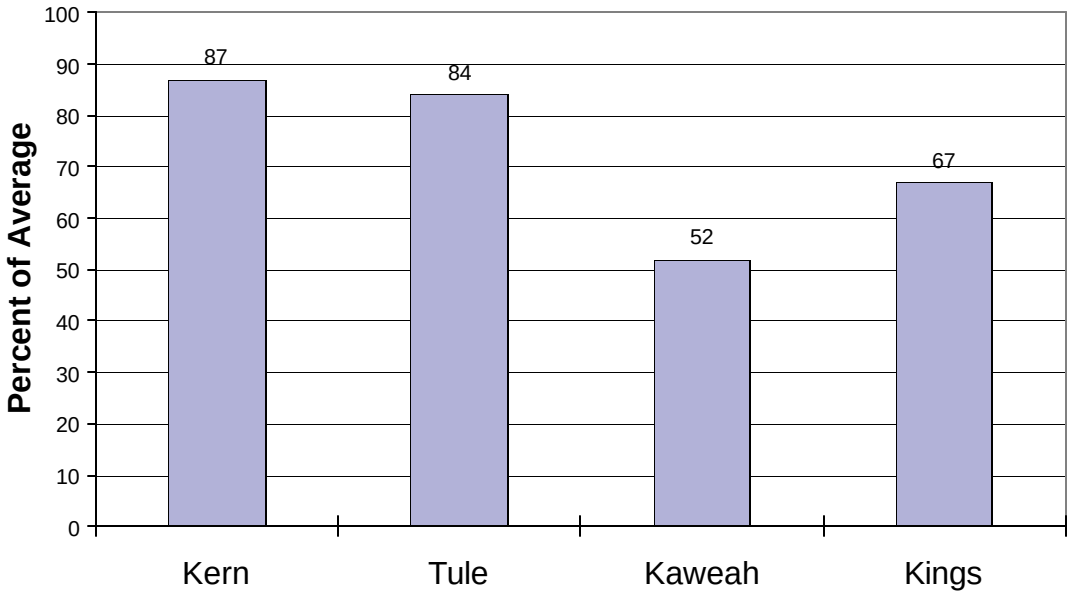
Water Content in % of April 1 Average



Tulare Lake Basin

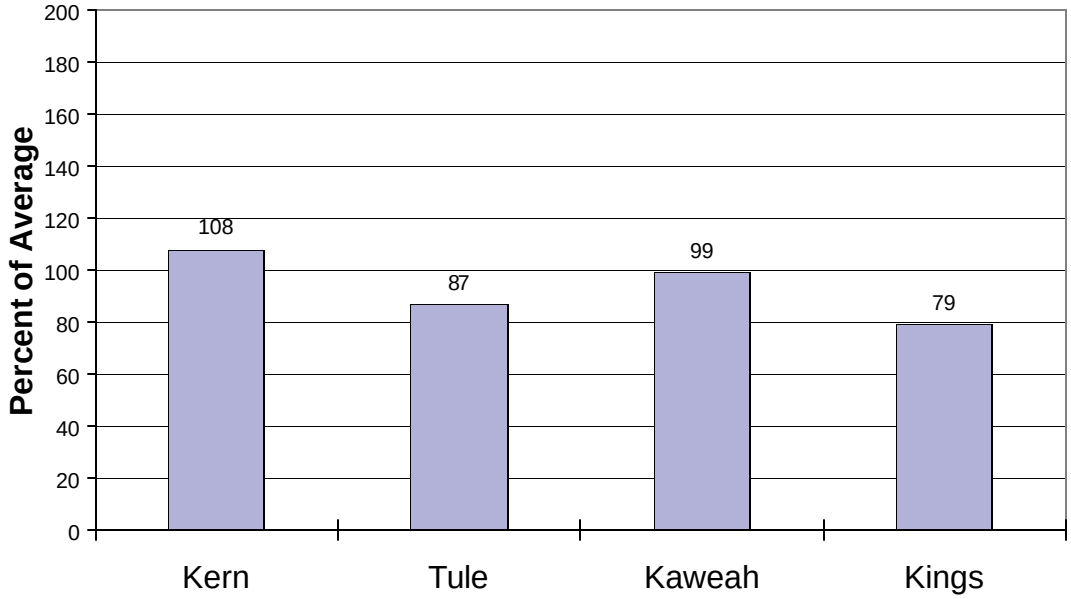
Basin Reservoir Storage

Contents of Major Reservoirs in % of Average

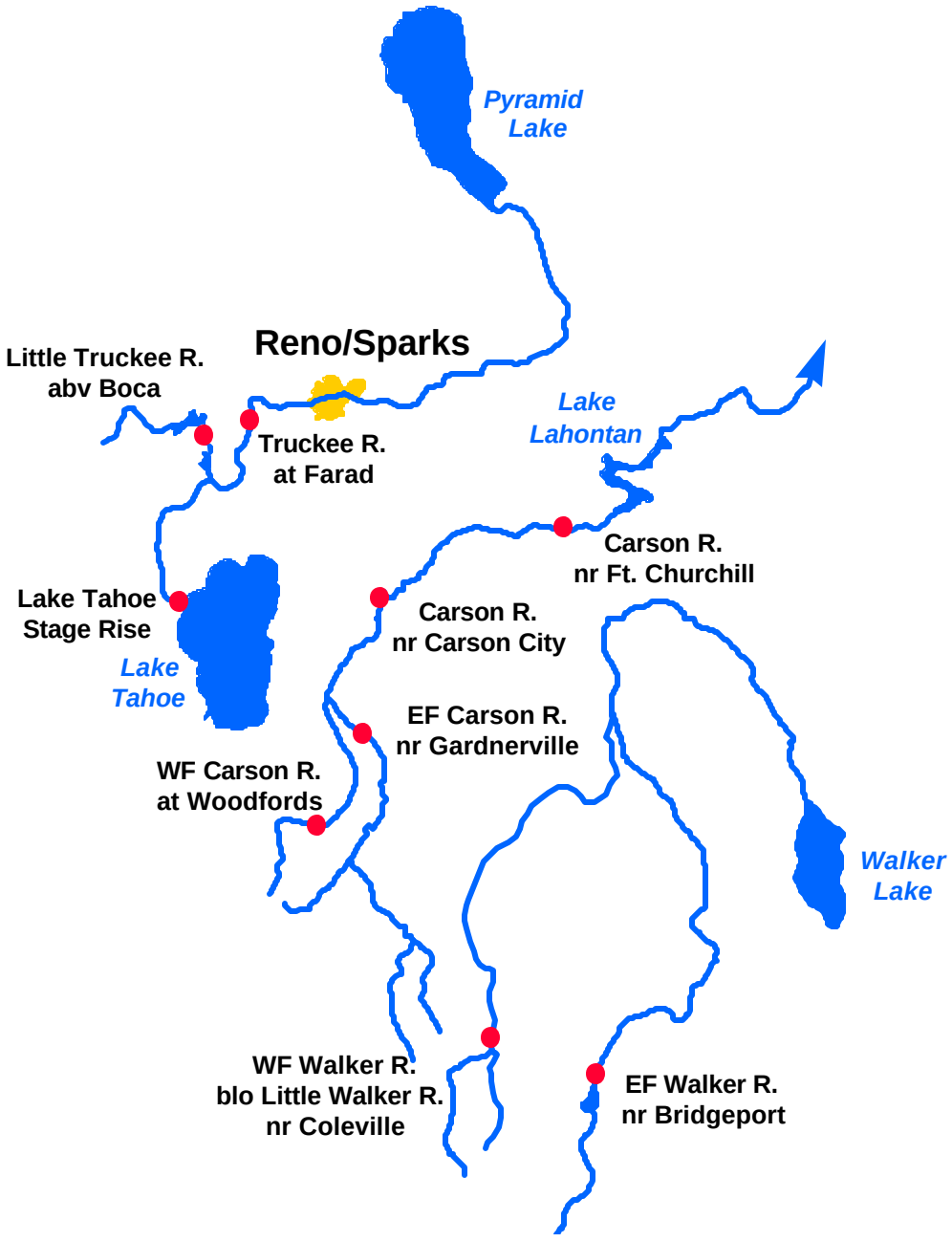


Seasonal Basin Runoff

October 1 to Date



East Side Sierra Nevada Basins



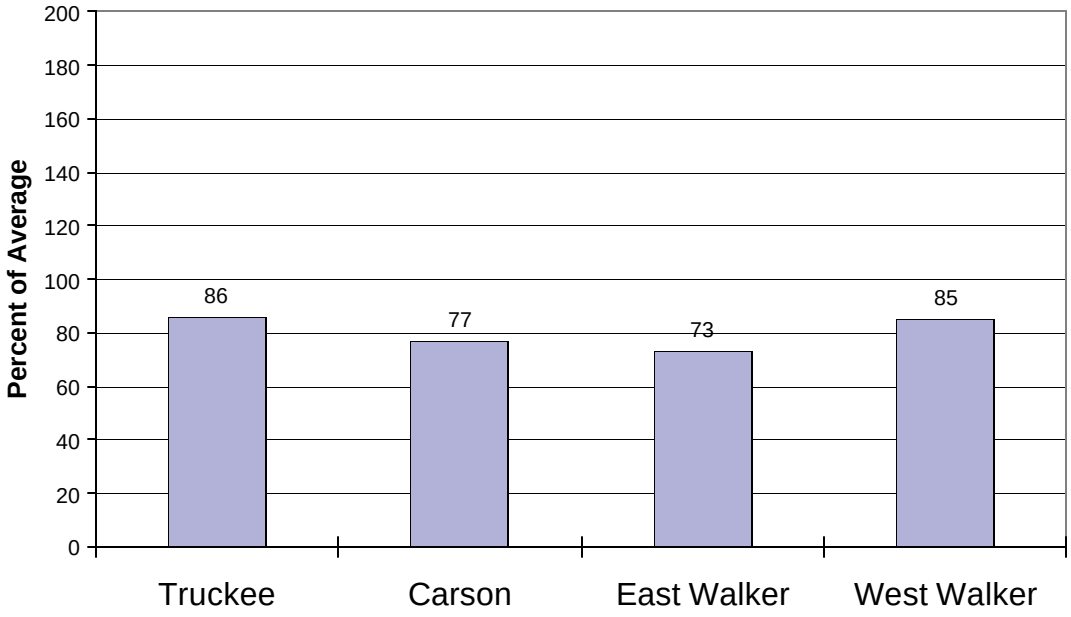
Water Supply Forecasts

		Most Prob Vol KAF	Most Prob Vol %Norm	Reas Max Vol KAF	Reas Min Vol KAF	30 Year Avg KAF
Truckee River						
Truckee River						
Lake Tahoe Stage Rise	Apr-High	0.9	65	1.4	0.4	1.4
Ltl Truckee River						
Boca Res, abv, Truckee, nr	Apr-Jul	58	72	93	22	80
Truckee River						
Farad	Apr-Jul	195	75	305	83	260
Carson River						
EF Carson River						
Gardnerville, nr	Apr-Jul	145	77	230	63	189
WF Carson River						
Woodfords	Apr-Jul	41	73	67	15.0	56
Carson River						
Carson City, nr	Apr-Jul	125	66	210	36	188
Fort Churchill, nr	Apr-Jul	110	62	182	39	178
Walker River						
East Walker River						
Bridgeport, nr	Apr-Aug	54	81	86	22	67
West Walker River						
Ltl Walker, blo, Coleville, nr	Apr-Jul	145	93	210	80	156

East Side Sierra Nevada Basins

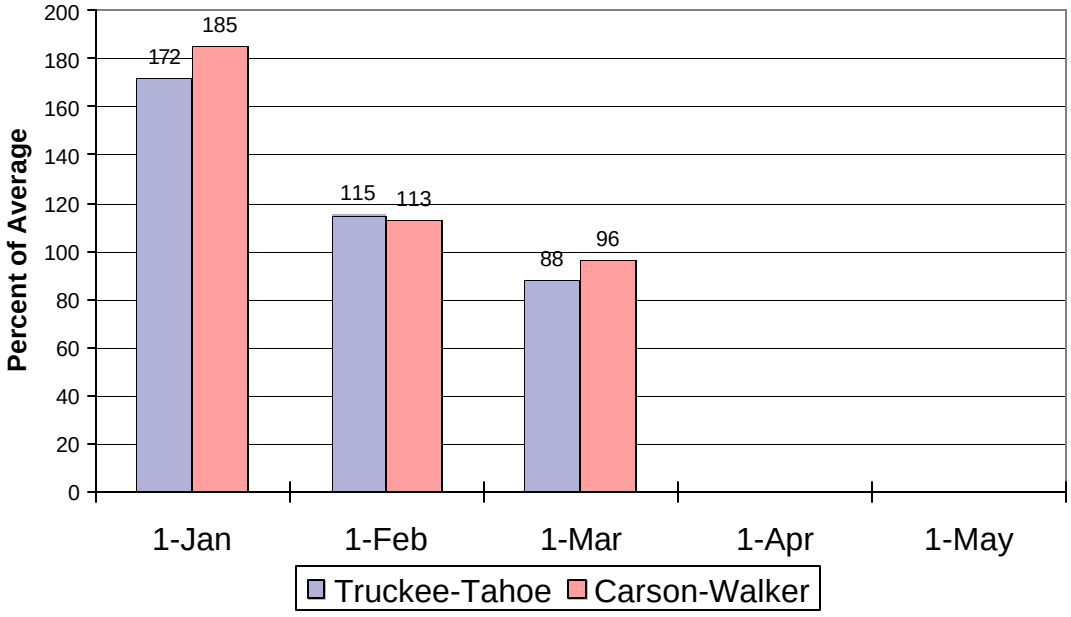
Seasonal Basin Precipitation

October 1 to Date



Basin Snowpack

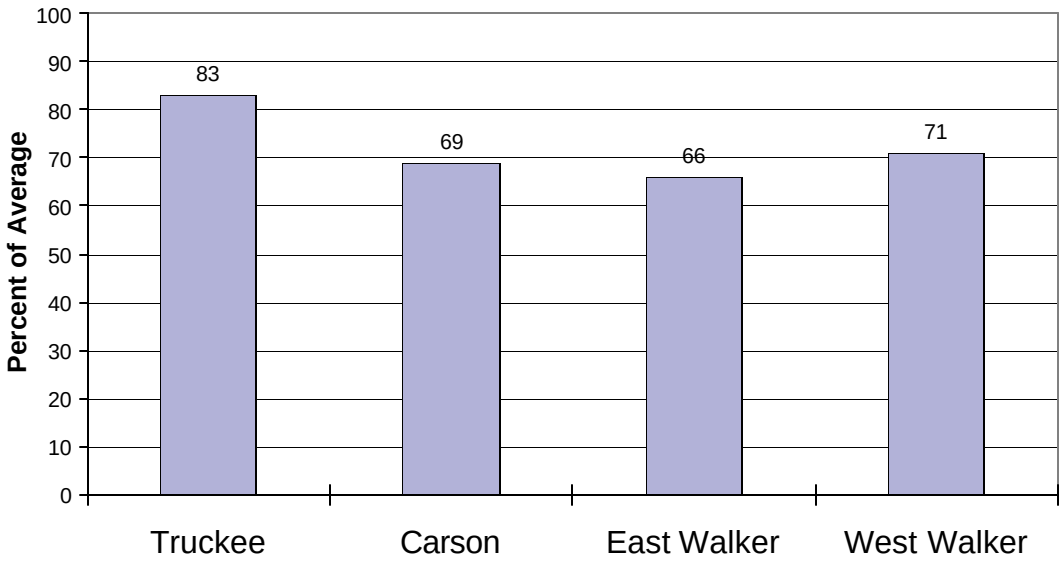
% of Average SWE to Date



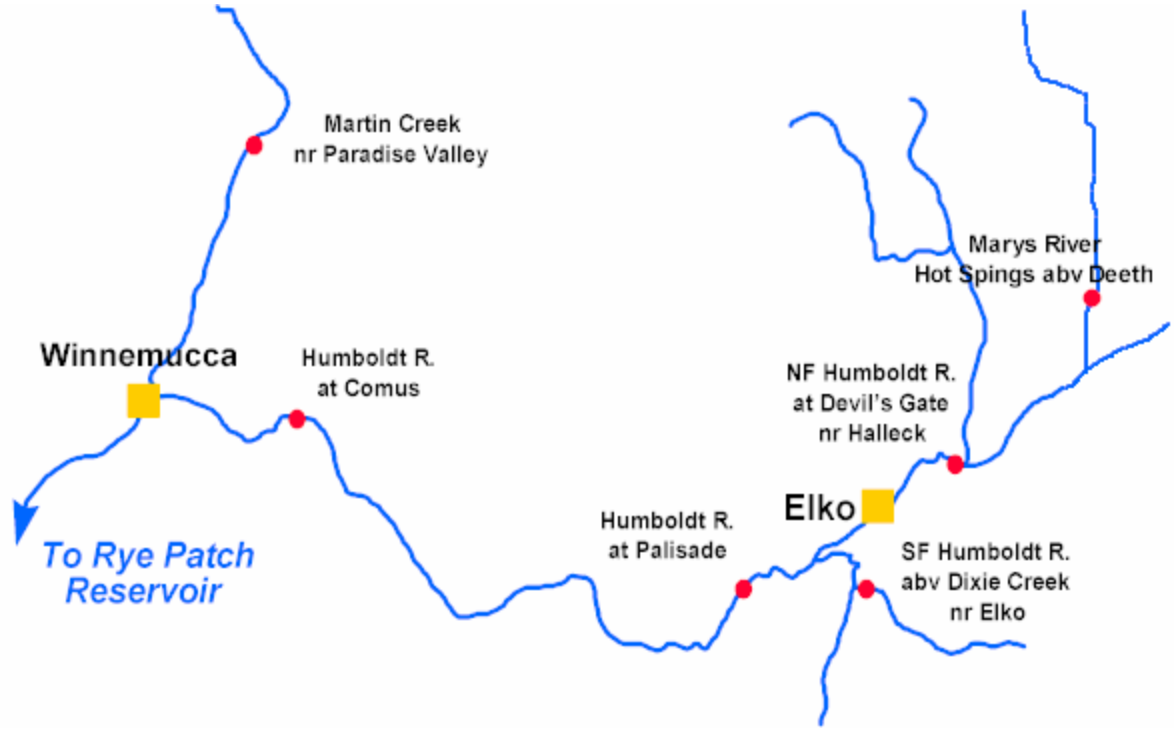
East Side Sierra Nevada Basins

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
NF Humboldt River						
Devils Gate, at, Halleck, nr	Apr-Jul	14.0	41	31	7.0	34*
SF Humboldt River						
Dixie Ck, abv, Elko, nr	Apr-Jul	34	45	60	20	76
Marys River						
Hot Springs, abv, Deeth, nr	Apr-Jul	18.0	46	32	10.0	39
Humboldt River						
Palisade	Apr-Jul	105	42	200	40	250
Comus	Apr-Jul	55	24	150	25	225
Martin Ck						
Paradise Vly, nr	Apr-Jul	5.0	27	12.0	2.5	18.7

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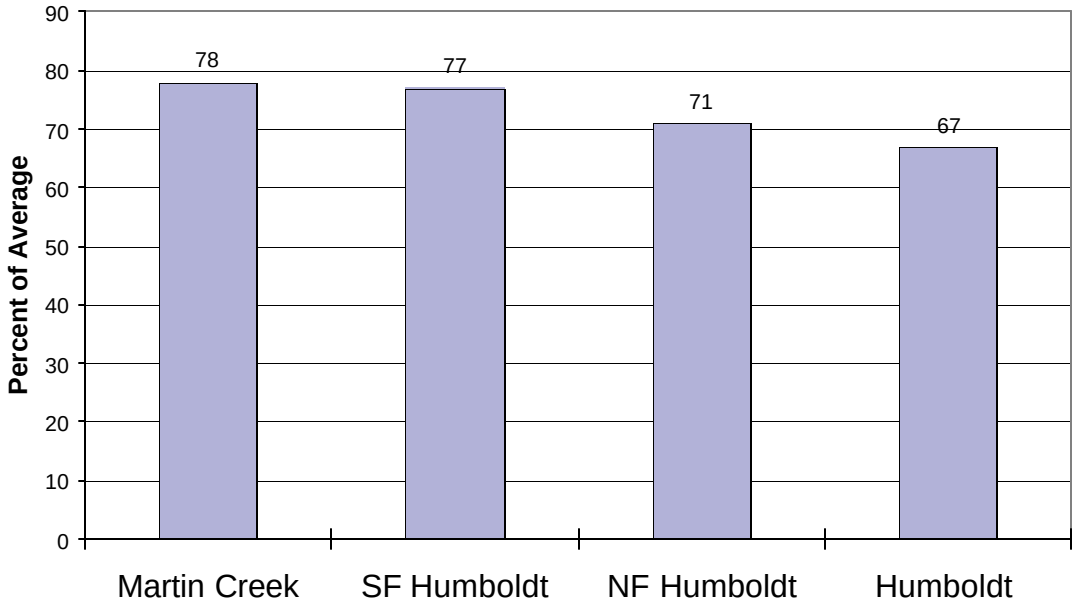
Humboldt River Basin

Seasonal Basin Precipitation

October 1 to Date



Basin Snowpack

% of Average SWE to Date