Water Supply Outlook

California and Northern Nevada

January 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 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

January 01, 2012

Snow basins in California got off to a good start this water year with many watersheds in the central and southern Sierra Nevada receiving average to much above average precipitation during October. However, dry weather dominated during November and December bringing seasonal averages to much below average by the end of December. Although water managers are contending with low snow amounts at the present time, conditions are partly mitigated by much above average carryover storage from last year's bountiful storms. Even though one of the wettest months in the wet season has come and gone, there is room for cautious optimism that plenty of time remains for conditions to improve.

Both December and seasonal (October 1, 2011 to December 31, 2011) precipitation was much below average for the region. It was among one of the driest Decembers for many locations in the Upper Sacramento and Sierra Nevada. To cite a few examples, it was the 3rd driest December in 123 years of record at Mount Shasta City, California. It was the driest December on record at South Lake Tahoe and Mammoth Lakes Ranger Station.

Basin	Dec % of Avg	WY % of Avg
Trinity	11	54
Upper Sacramento	5	39
Central Sierra	1	39
Southern Sierra	1	57
Walker	1	30
Carson	2	29
Truckee	3	33
Klamath	30	50

Electronic snow sensor readings as of January 1st, 2012 show much more meager snow pack conditions than at this time last year.

Basin	% of Average January 1, 2012	% of Average January 1, 2011
Trinity/Upr Sac/Nrn Sierra	24	179
Central Sierra	14	198
Southern Sierra	27	271
Tahoe-Truckee	13	212
Carson-Walker	10	216
Humboldt	23	193
Upper Klamath	33	193

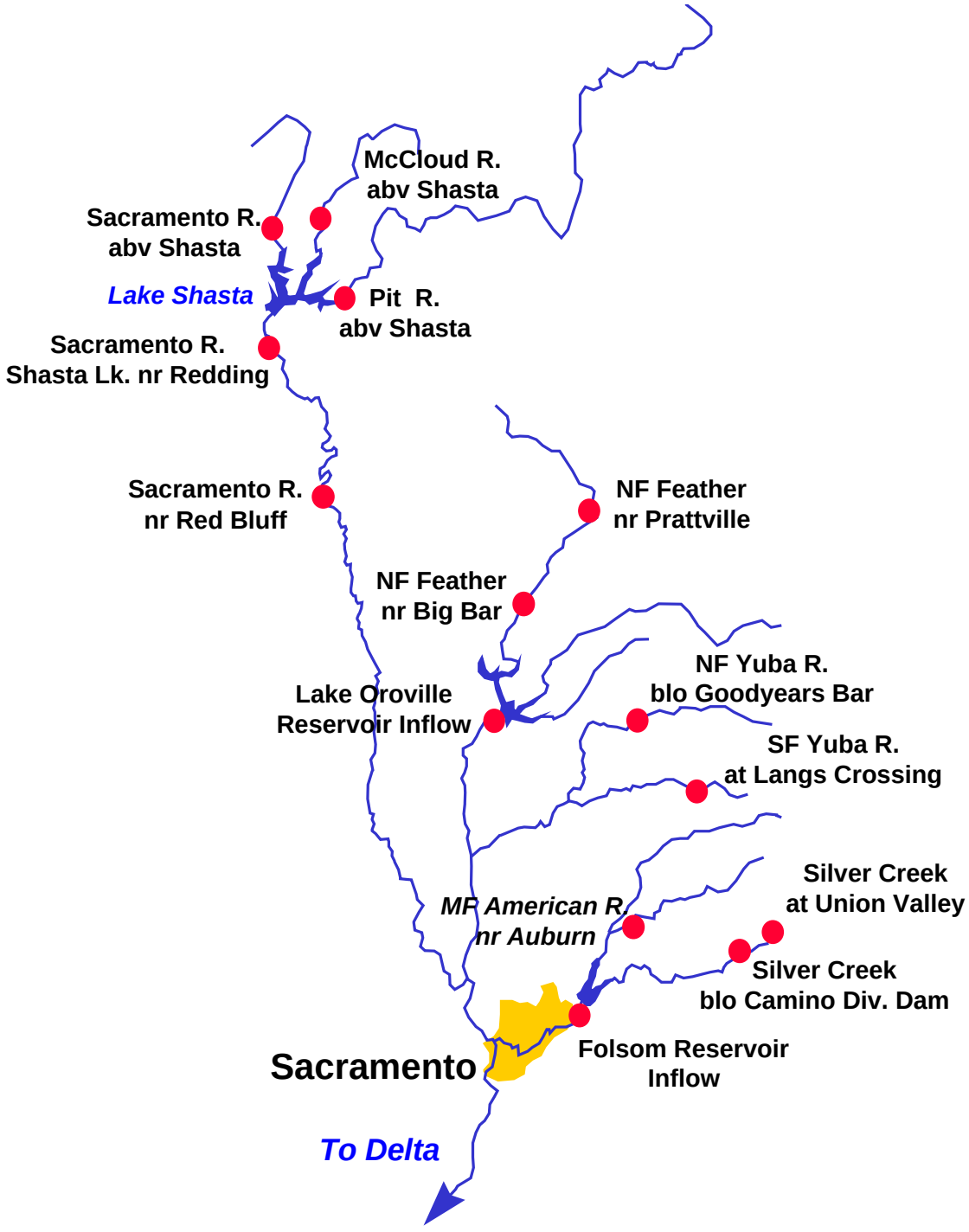
The unusually dry December resulted in much below average runoff during the month:

Basin	Dec % of Avg	WY % of Avg
Trinity-Sacramento	25	45
San Joaquin	17	51
Tulare Lake	55	115
East Side Sierra	49	63
Humboldt	72	86
Upper Klamath	52	65

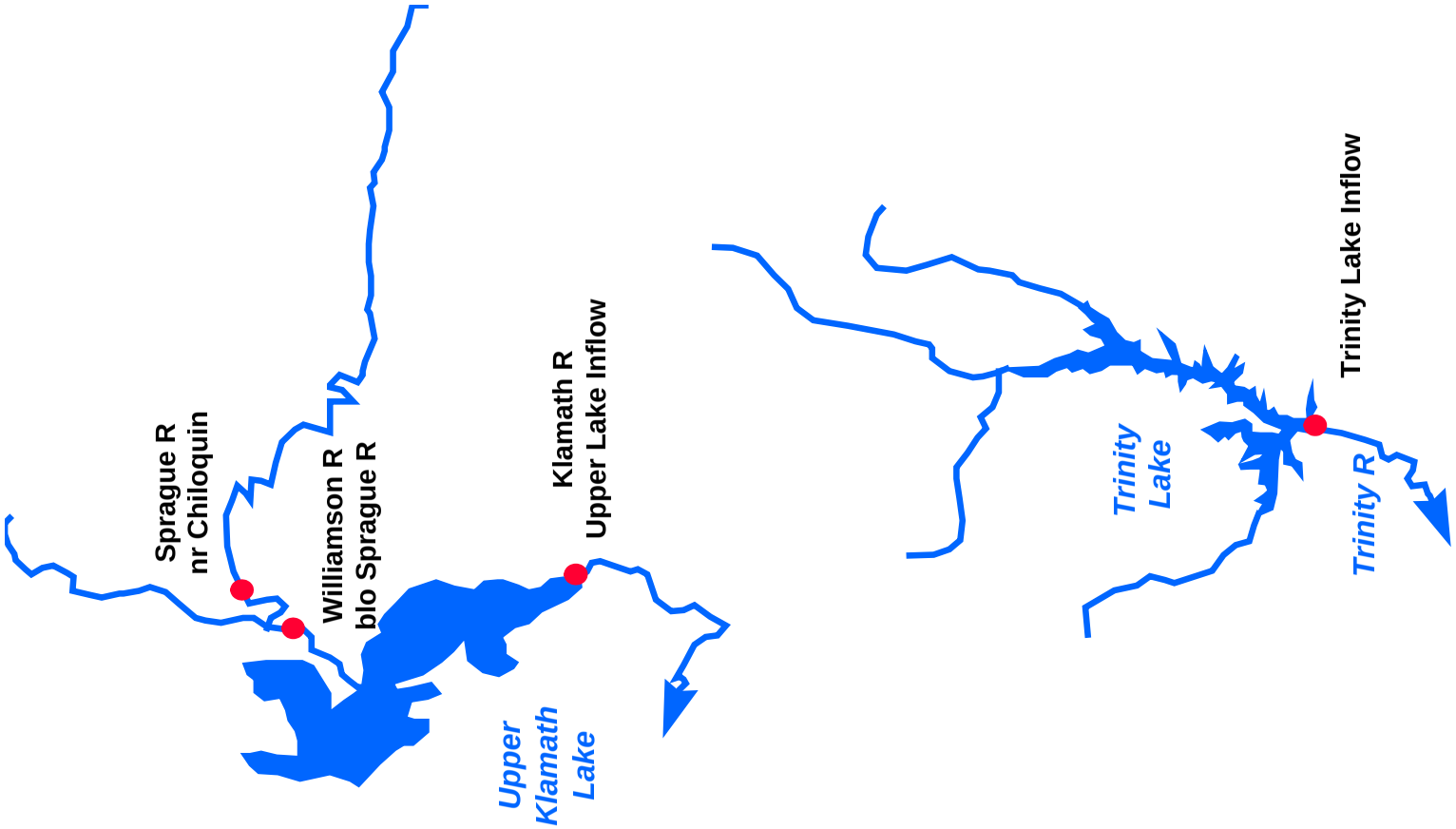
Reservoir storage in the Upper Sacramento/Sierra Nevada reflects the wet conditions during the past year with above average reservoir contents. The key reservoirs at Shasta Lake and Lake Oroville are at 111 percent of average as of December 31. Stored water in the Sacramento region as of December 31st was at 110 percent of average for the date, the San Joaquin at 132, and the Tulare Lake watershed at about 123 percent. East-side Sierra reservoirs were at 140 percent of average. The lake level at Lake Tahoe stood at 6226.76 feet (or 3.76 feet above its natural rim altitude of 6223.0 feet) as of December 31st. Usable storage was 457,500 acre-feet or 131 percent of average. It was 187,900 acre-feet (53 percent of average) at this time last year. Storage at Lahontan Reservoir in Nevada stands at 126 percent of average as of December 31st while Rye Patch Reservoir is at 138 percent. Storage at Upper Klamath Lake is about 85 percent of average.

April through July runoff forecasts vary from 50 to 74 percent for the Upper Sacramento and west slope Sierra Nevada basins. They range from 31 to 54 percent of average (1971-2000) for the east side Sierra Nevada basins and 21 to 36 percent for forecast points on the main stem Humboldt River. The April through September forecast for the Upper Klamath Lake inflow is 58 percent.

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	Apr-Sep	235	61	350	175	385
Sprague River						
Chiloquin, nr	Apr-Sep	115	50	235	75	230
Upper Klamath Falls River						
Inflow	Apr-Sep	300	58	550	165	515
Lost River						
Gerber Reservoir Inflow	Feb-Jul	24	51	50	10.0	47
Clear Lake Reservoir Inflow	Feb-Jul	57	54	100	25	105
Scott River						
Fort Jones, nr	Apr-Jul	100	55	235	30	181
Trinity R River						
Trinity Lake	Apr-Jul	375	59	715	200	635

SACRAMENTO RIVER BASIN

		Most Prob Vol KAF	Most Prob Vol %Norm	Reas Max Vol KAF	Reas Min Vol KAF	30 Year Avg KAF
SACRAMENTO RIVER ABOVE BEND BRIDGE						
Pit River						
Montgomery Ck, nr	Apr-Jul	645	69	1020	510	940
Mccloud River						
Shasta Lk, abv	Apr-Jul	275	74	440	190	370
Sacramento River						
Delta	Apr-Jul	195	67	385	70	290
Shasta Dam	Apr-Jul	1240	69	2150	850	1790
Bend Bridge, abv, Red Bluff, nr	Apr-Jul	1600	66	3130	1050	2440

Water Supply Forecasts

		Most Prob Vol KAF	Most Prob Vol %Norm	Reas Max Vol KAF	Reas Min Vol KAF	30 Year Avg KAF
FEATHER RIVER ABOVE OROVILLE RESERVOIR						
North Fork Feather River						
Prattville, nr	Apr-Jul	220	66	405	135	333*
Big Bar	Apr-Jul	500	52	1160	250	962*
Feather River						
Oroville Dam	Apr-Jul	880	50	2100	400	1760
YUBA RIVER ABOVE SMARTVILLE						
North Yuba River						
Goodyears Bar, blo	Apr-Jul	160	59	350	55	273*
South Yuba River						
Langs Crossing	Apr-Jul	140	62	290	50	225*
Yuba River						
Englebright Reservoir	Apr-Jul	540	54	1330	160	995
AMERICAN RIVER ABOVE FOLSOM RESERVOIR						
Middle Fork American River						
Auburn, nr	Apr-Jul	265	54	590	110	490*
Silver Creek						
Union Valley	Apr-Jul	60	61	130	20	98*
Camino Dam, blo	Apr-Jul	95	60	210	30	158*
American River						
Folsom Reservoir	Apr-Jul	710	58	1600	230	1230

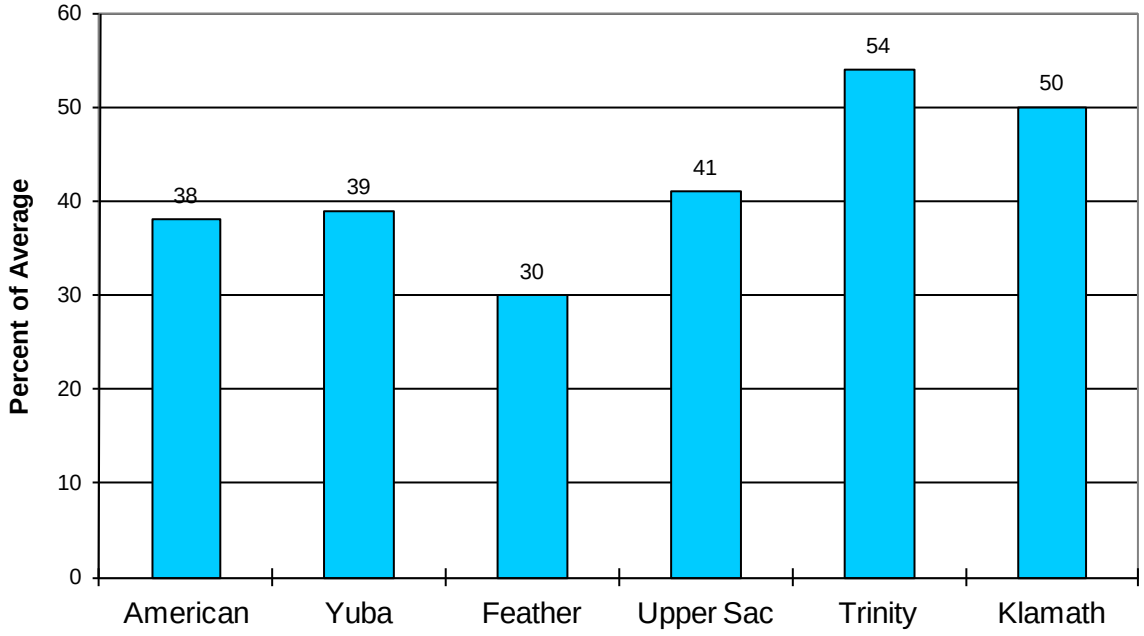
***30 Year Averages for 1971-2000 are incomplete. Those forecast points with an asterisk have incomplete averages, so 1961-1990 averages are listed. The new averages will be incorporated into this report when the complete data sets become available.**

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

Sacramento/Trinity/Klamath River Basins

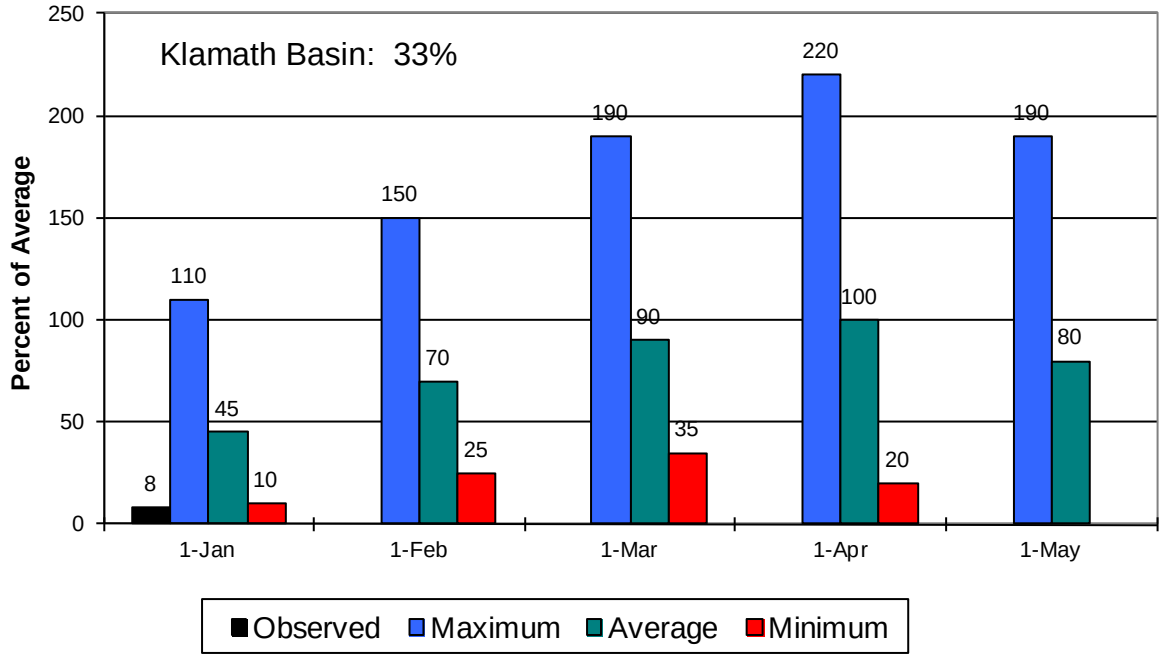
Seasonal Basin Precipitation

October 1 to Date



Seasonal Basin Snowpack

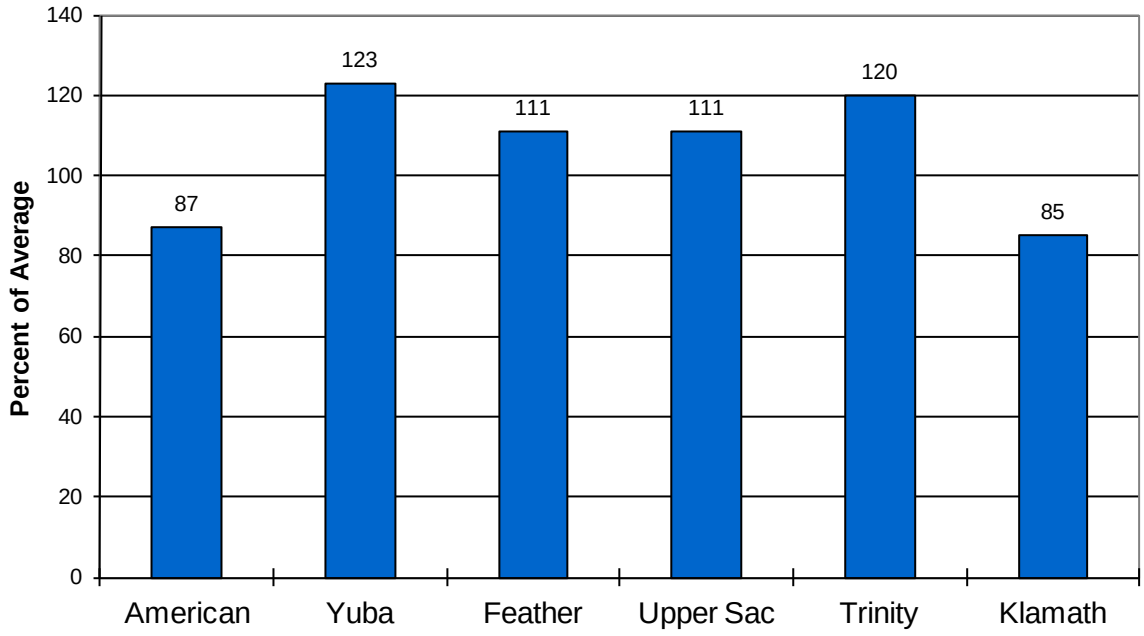
Water Content in % of April 1 Average



Sacramento/Trinity/Klamath River Basins

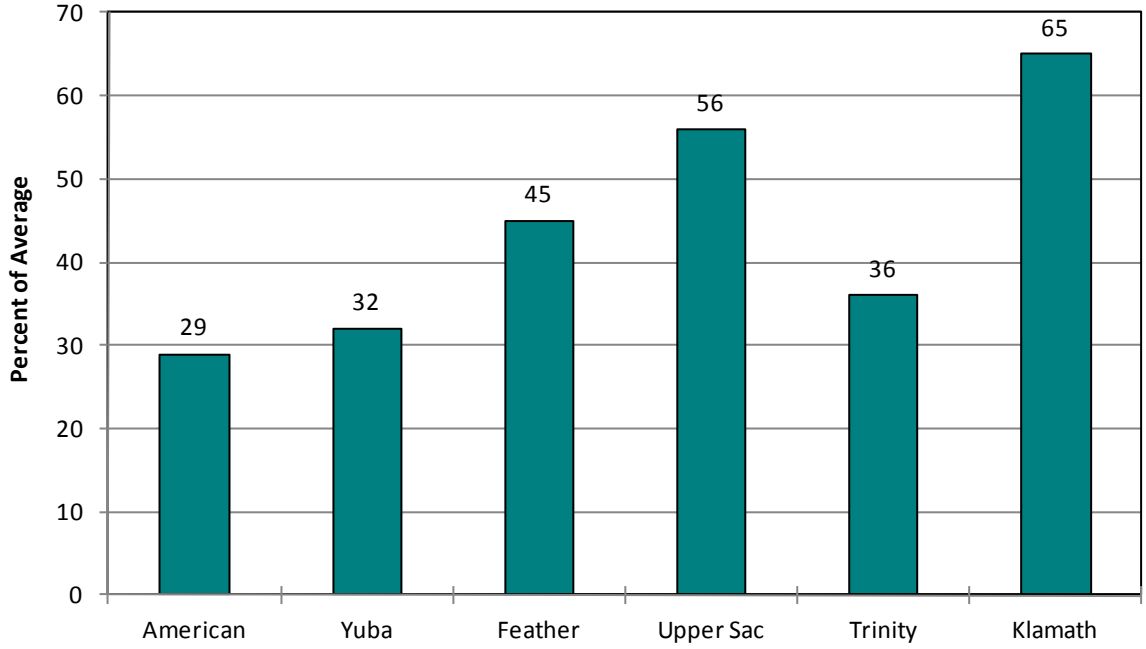
Basin Reservoir Storage

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
South Fork San Joaquin River						
Hooper Ck, blo, Florence Lk, nr	Apr-Jul	115	60	240	60	192*
San Joaquin River						
Millerton Lake	Apr-Jul	760	60	1550	300	1270
Merced River						
Pohono Bridge, at, Yosemite, nr	Apr-Jul	235	65	450	90	360*
Merced Falls, blo	Apr-Jul	355	55	760	130	645
Tuolumne River						
Hetch Hetchy, nr	Apr-Jul	385	65	740	160	596*
La Grange, nr	Apr-Jul	740	60	1500	310	1230
Middle Fork Stanislaus River						
Beardsley Dam, blo	Apr-Jul	190	59	400	80	320*
Stanislaus River						
New Melones Dam	Apr-Jul	380	55	830	140	695
North Fork Mokelumne River						
West Point	Apr-Jul	230	55	500	80	416*
Mokelumne River						
Pardee Reservoir	Apr-Jul	250	54	535	105	460
Cosumnes River						
Michigan Bar	Apr-Jul	65	53	180	10.0	123

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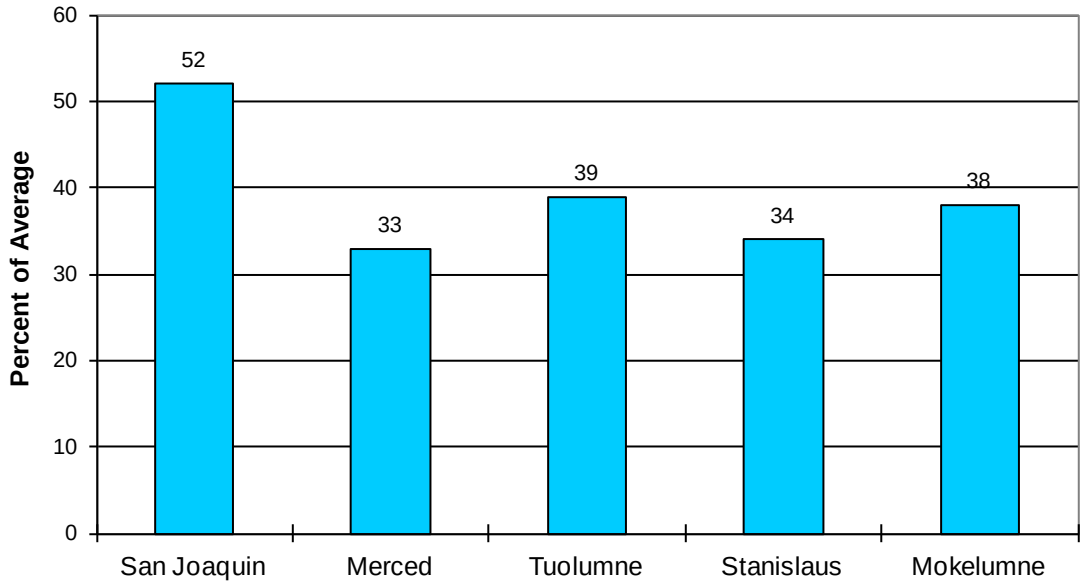
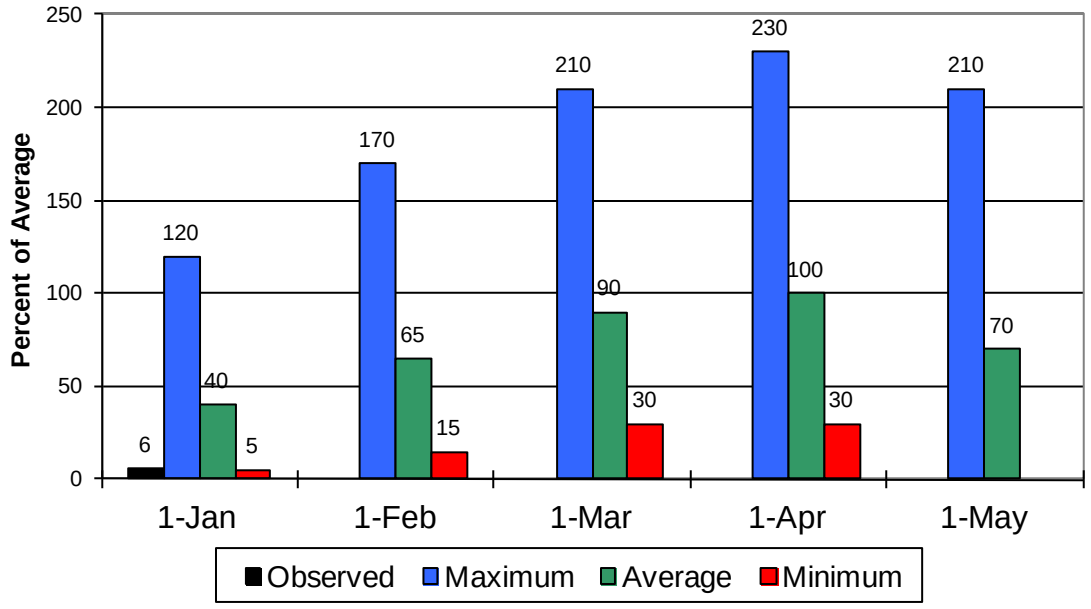
San Joaquin Basin

Seasonal Basin Precipitation
October 1 to Date

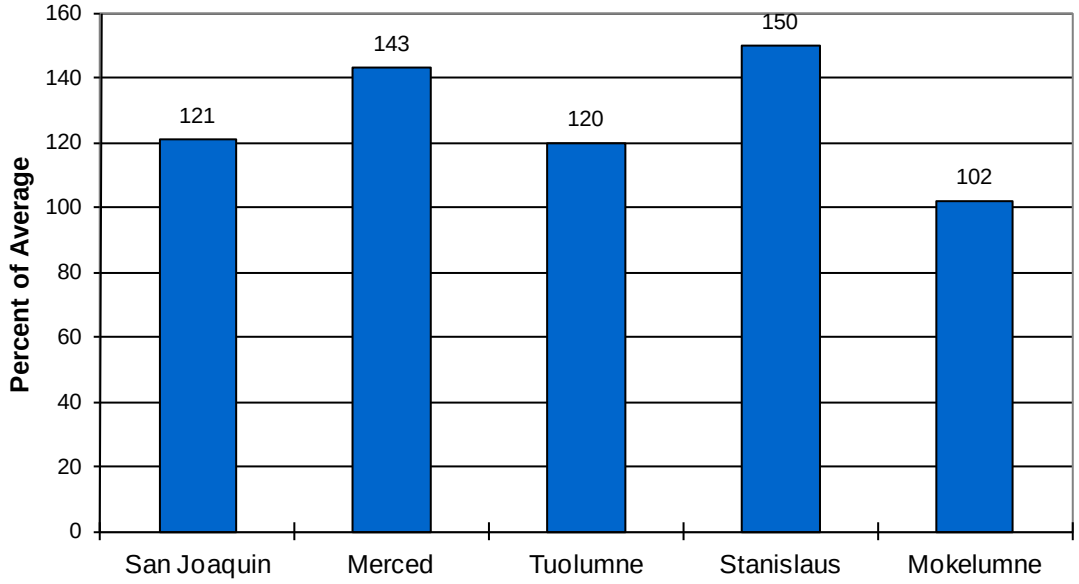


Seasonal Basin Snowpack
Water Content in % of April 1 Average

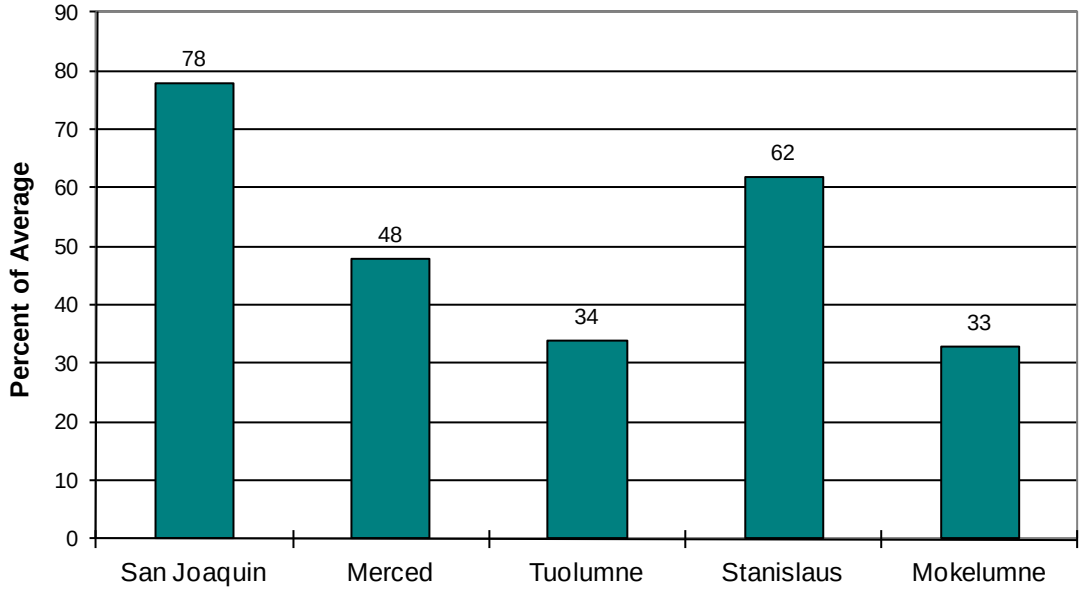


San Joaquin Basin

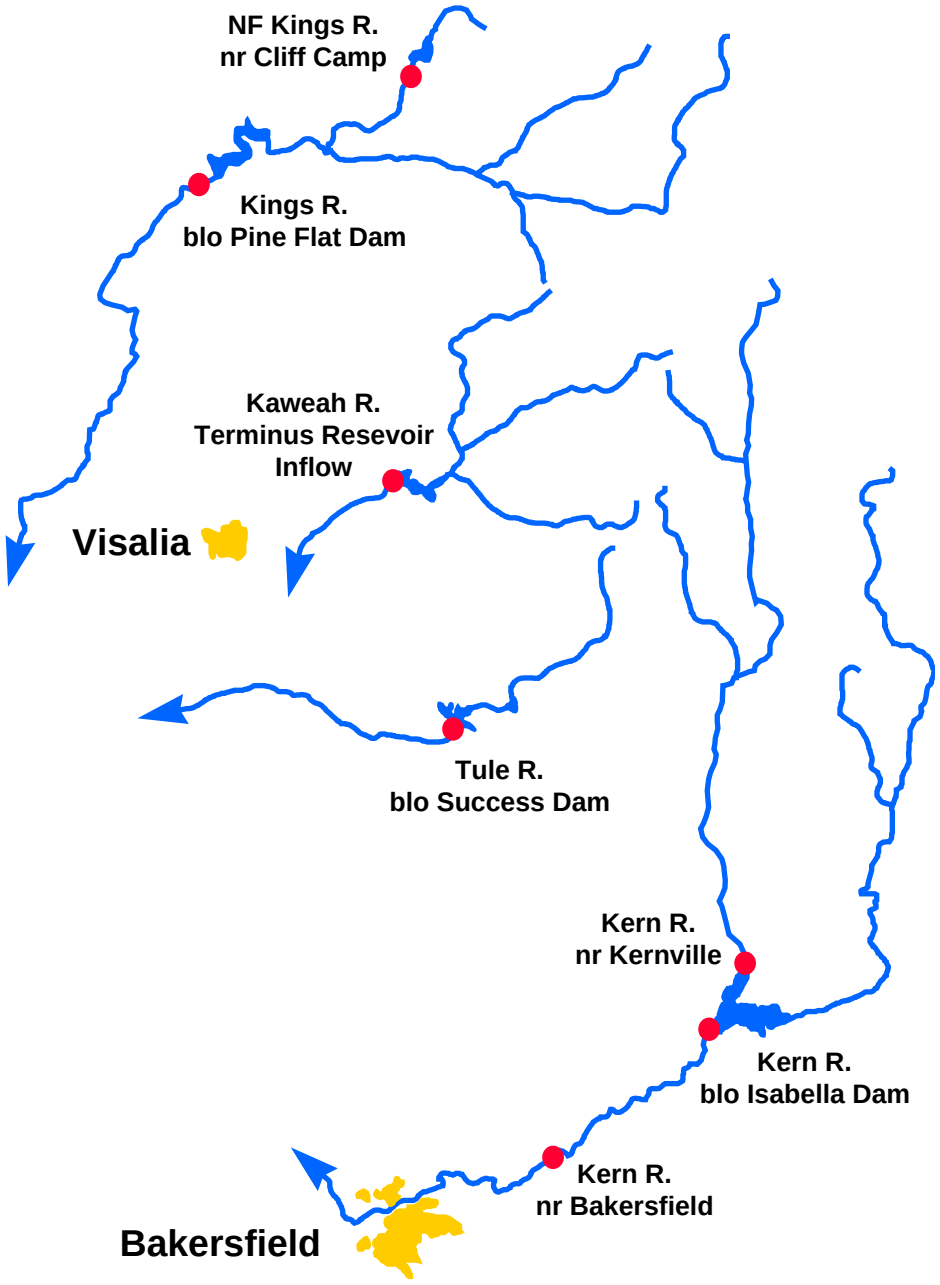
Basin Reservoir Storage
Contents of Major Reservoirs in % of Average



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
Kern River						
Kernville, nr	Apr-Jul	260	65	480	100	398*
Isabella Dam, blo	Apr-Jul	290	60	580	110	480
Bakersfield, nr	Apr-Jul	295	60	600	115	490
Tule River						
Success Dam	Apr-Jul	30	45	80	10.0	66
Kaweah River						
Terminus Dam	Apr-Jul	175	60	350	70	290
North Fork Kings River						
Cliff Camp, nr	Apr-Jul	145	60	290	60	240*
Kings River						
Pine Flat Dam, blo	Apr-Jul	750	60	1500	300	1250

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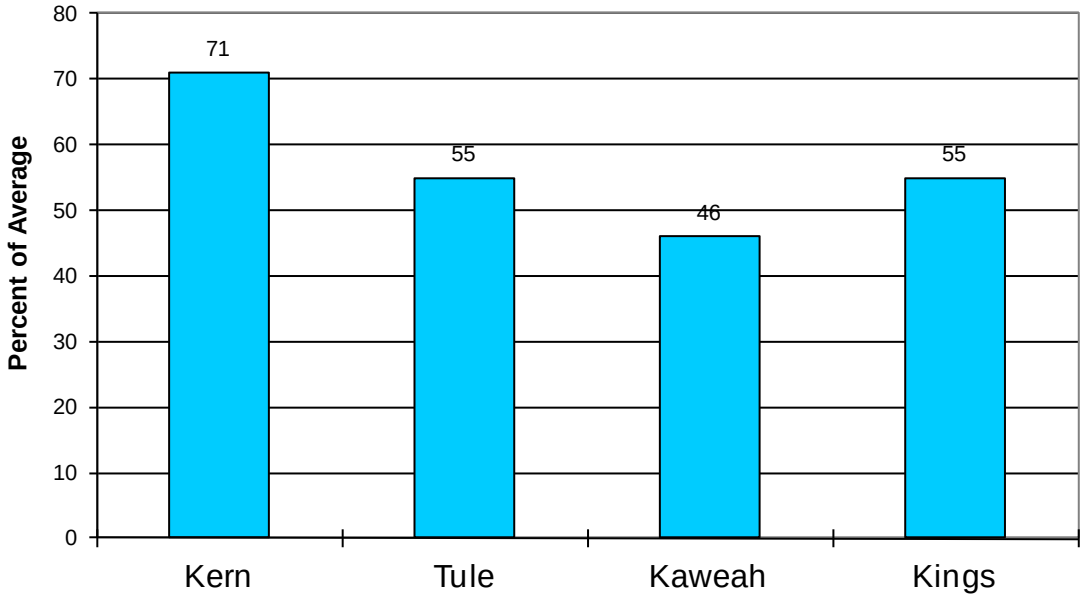
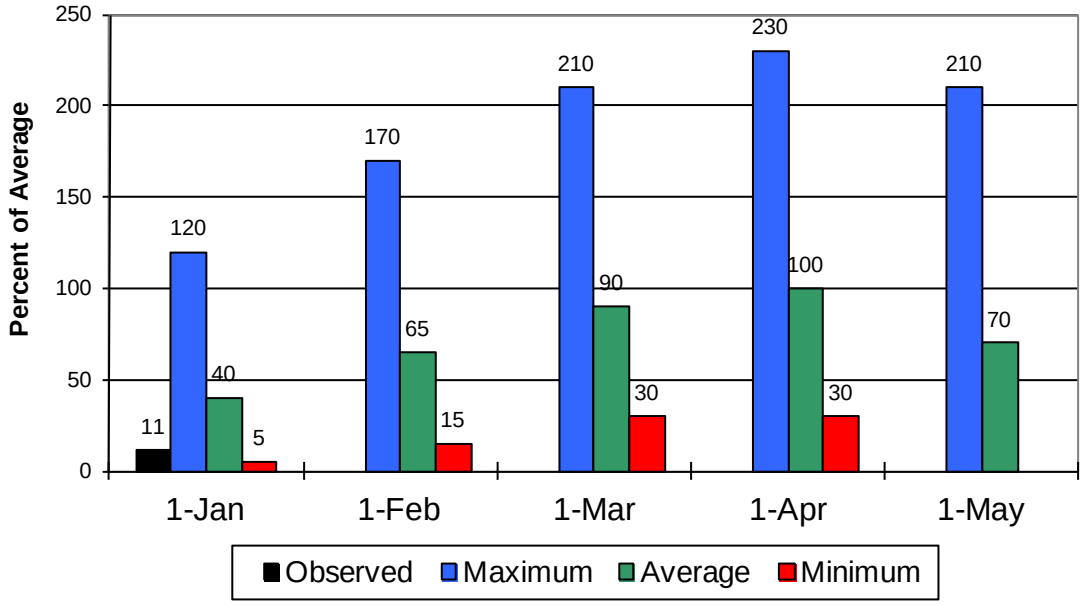
Tulare Lake Basin

Seasonal Precipitation
October 1 to Date



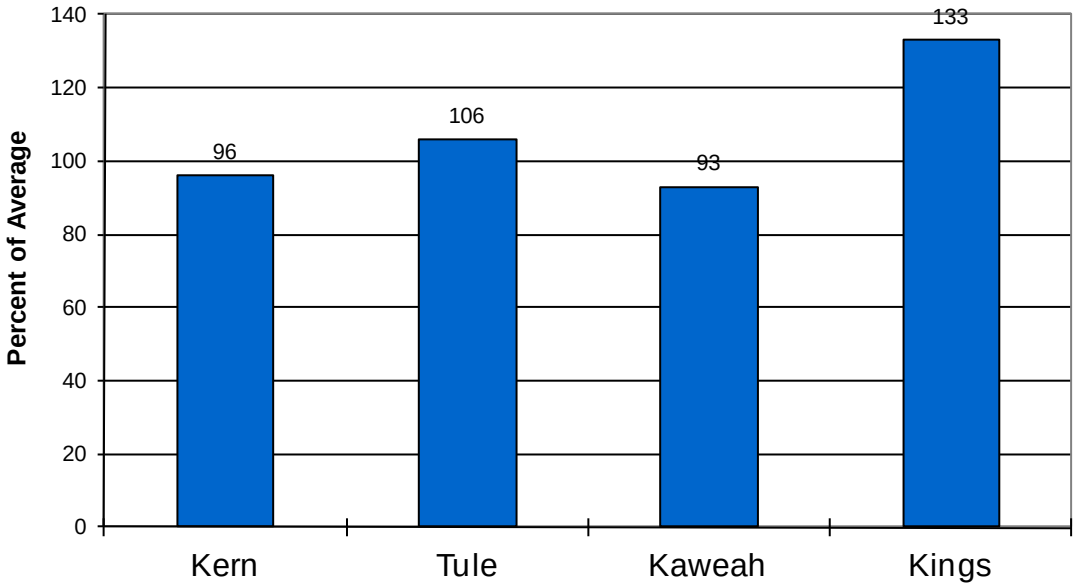
Seasonal Basin Snowpack
Water Content in % of April 1 Average



Tulare Lake Basin

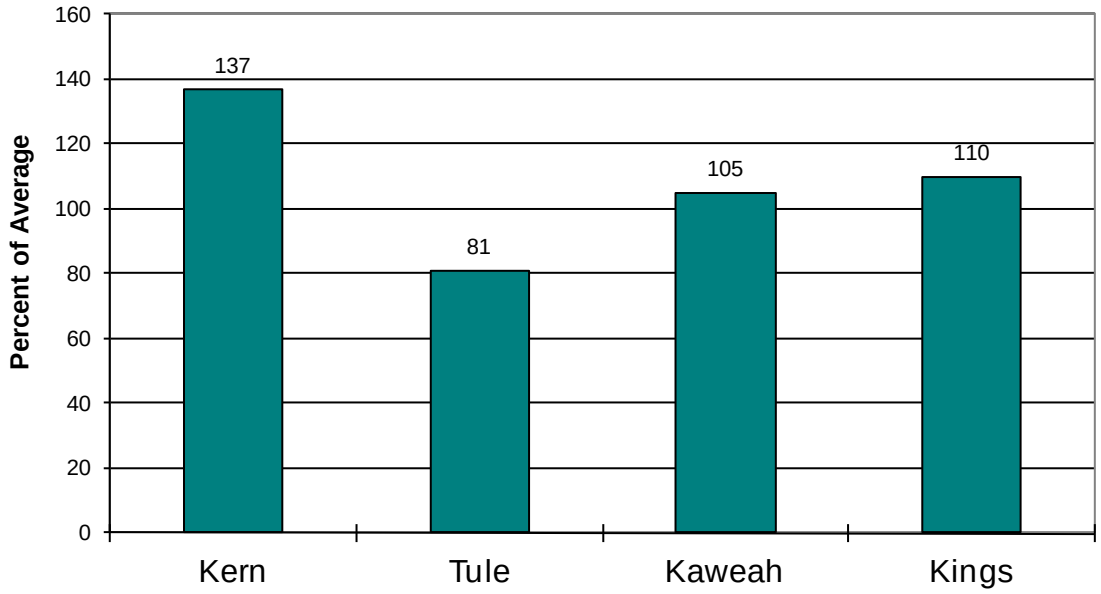
Basin Reservoir Storage

Contents of Major Reservoirs in % of Average

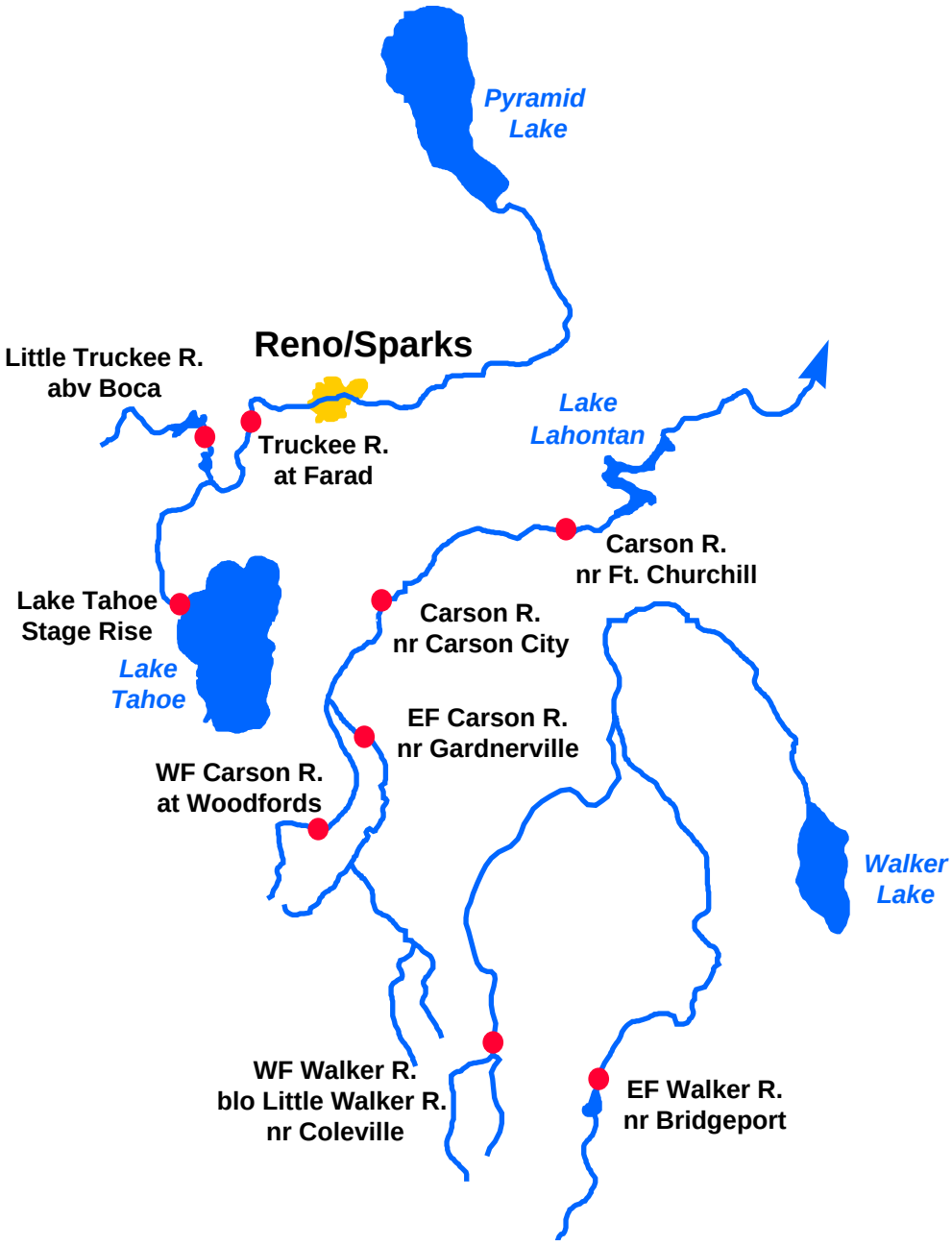


Seasonal Basin Runoff

October 1 to Date



East Side Sierra Nevada Basins



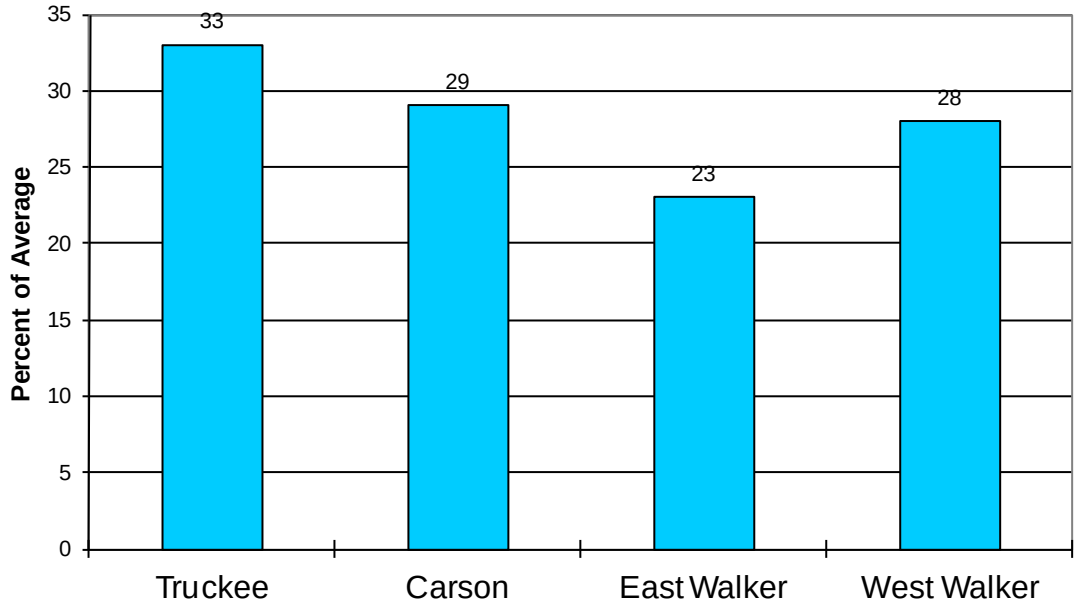
Water Supply Forecasts

EAST SIDE SIERRA NEVADA BASINS

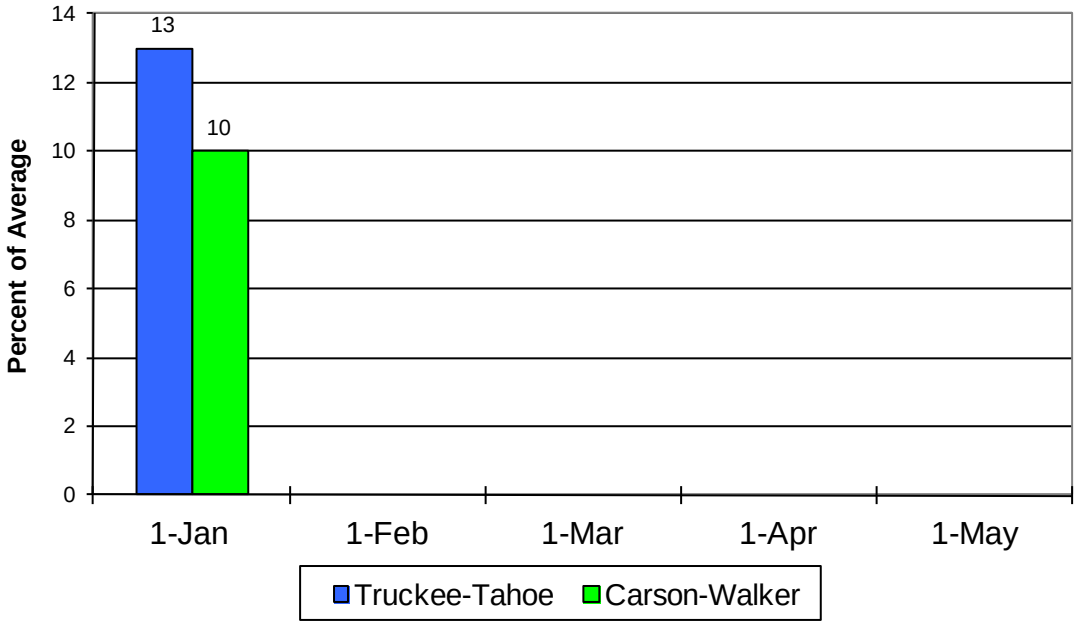
		Most Prob Vol KAF	Most Prob Vol %Norm	Reas Max Vol KAF	Reas Min Vol KAF	30 Year Avg KAF
Truckee River						
Truckee River						
Lake Tahoe Stage Rise	Apr-High	0.70	51	1.84	0.04	1.38
Little Truckee River						
Stampede Dam	Apr-Jul	39	49	121	2.4	80
Truckee River						
Farad	Apr-Jul	125	48	390	7.8	260
Carson River						
East Fork Carson River						
Gardnerville, nr	Apr-Jul	95	50	215	5.7	189
West Fork Carson River						
Woodfords	Apr-Jul	28	50	69	2.2	56
Carson River						
Carson City, nr	Apr-Jul	70	37	255	1.88	188
Fort Churchill, nr	Apr-Jul	55	31	191	6.3	178
Walker River						
East Walker River						
Bridgeport, nr	Apr-Aug	32	48	84	2.0	67
West Walker River						
Ltl Walker, blo, Coleville, nr	Apr-Jul	85	54	189	6.2	156

East Side Sierra Nevada Basins

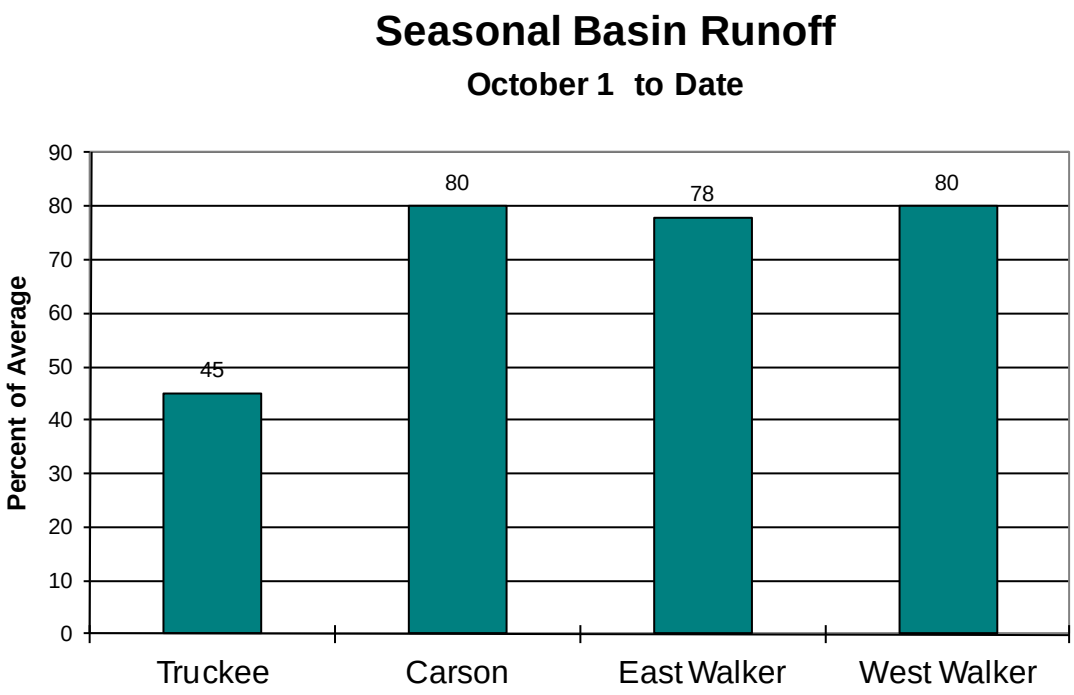
Seasonal Basin Precipitation
October 1 to Date



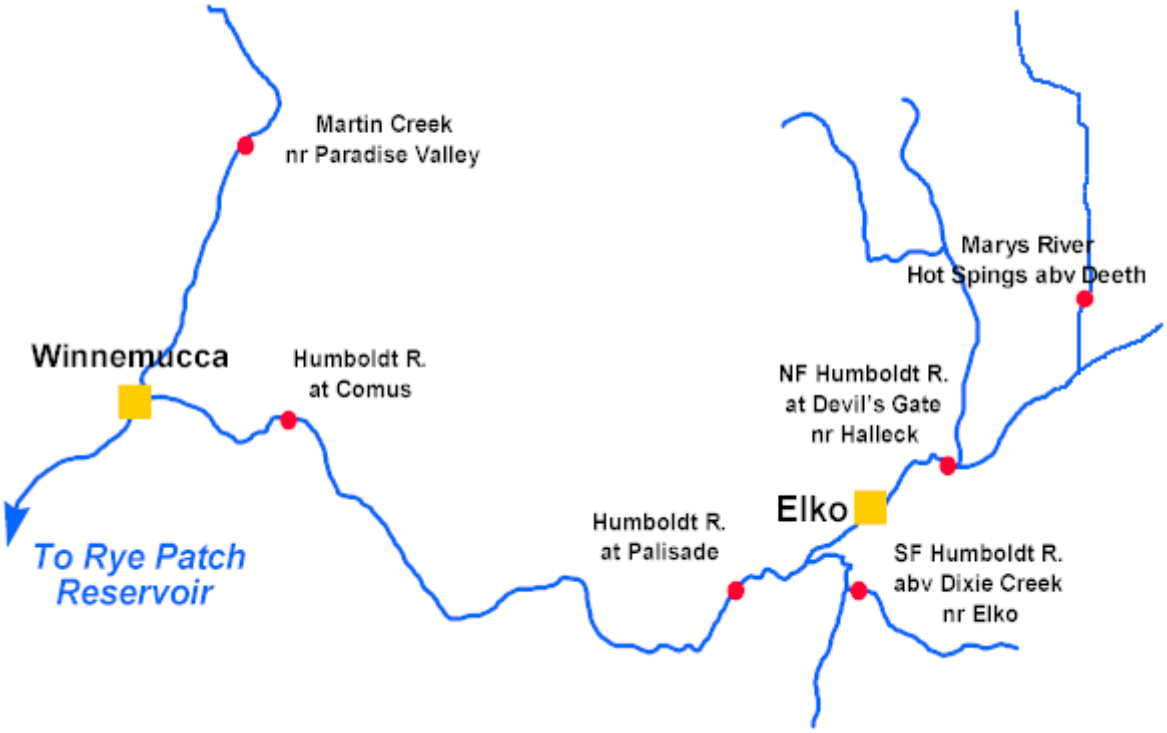
Basin Snowpack
% of Average SWE to Date



East Side Sierra Nevada Basins



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
North Fork Humboldt River						
Devils Gate, at, Halleck, nr	Apr-Jul	14.0	41	42	0.68	34*
South Fork Humboldt River						
Dixie Ck, abv, Elko, nr	Apr-Jul	36	47	107	3.8	76
Marys River						
Hot Springs, abv, Deeth, nr	Apr-Jul	15.0	38	38	1.17	39
Humboldt River						
Elko, nr	Apr-Jul	55	36	146	6.2	154
Palisade	Apr-Jul	90	36	195	7.5	250
Comus	Apr-Jul	60	27	184	4.5	225
Imlay, nr	Apr-Jul	40	21	185	3.8	188
Martin Ck						
Paradise Vly, nr	Apr-Jul	9.0	48	26	0.37	18.7

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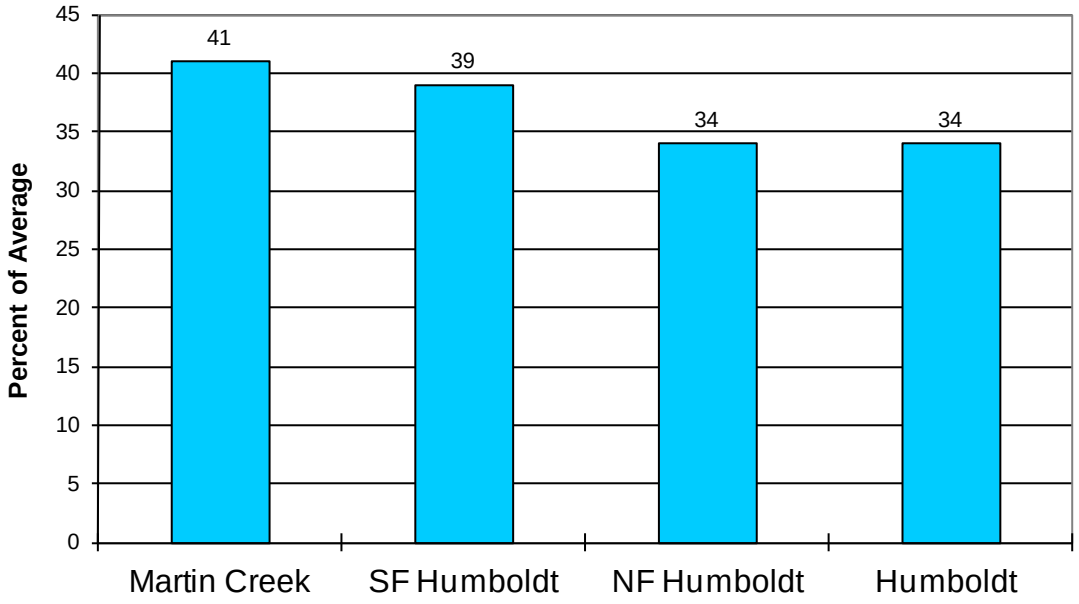
Humboldt River Basin

Seasonal Basin Precipitation
October 1 to Date



Basin Snowpack
% of Average SWE to Date