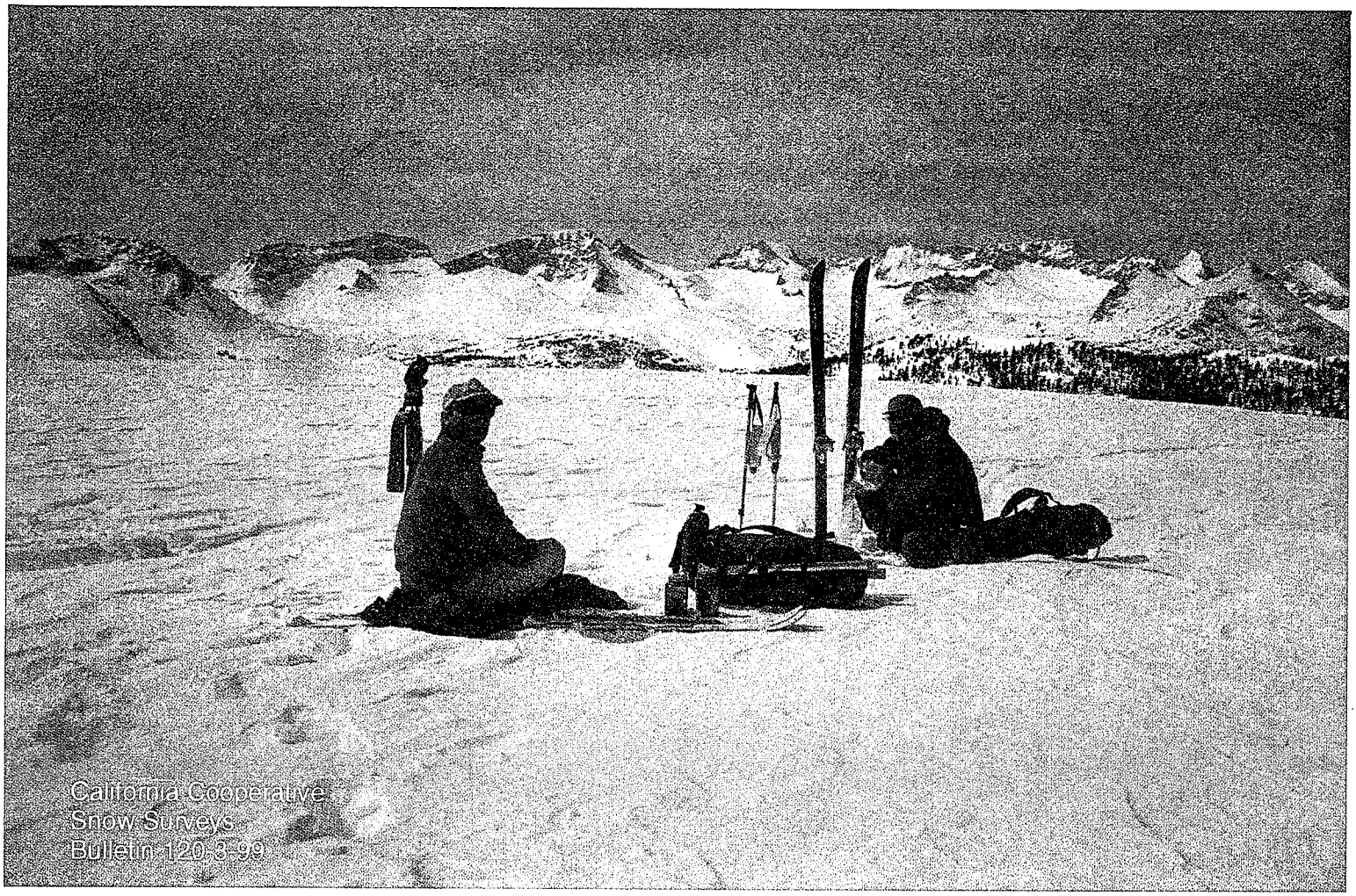

State of California
The Resources Agency

Department of
Water Resources

Water Conditions in California

Report 3 April 1, 1999

Gray Davis
Governor
State of California

Mary D. Nichols
Secretary for Resources
The Resources Agency

Thomas M. Hannigan
Director
Department of Water Resources

STATE OF CALIFORNIA
Gray Davis, Governor

THE RESOURCES AGENCY
Mary D. Nichols, Secretary for Resources

Department of Water Resources
Thomas M. Hannigan
Director

Raymond D. Hart
Deputy Director

Vacant
Chief Deputy Director

Stephen L. Kashiwada
Deputy Director

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Assistant Director for Legislation

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Division of Flood Management

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COOPERATING AGENCIES

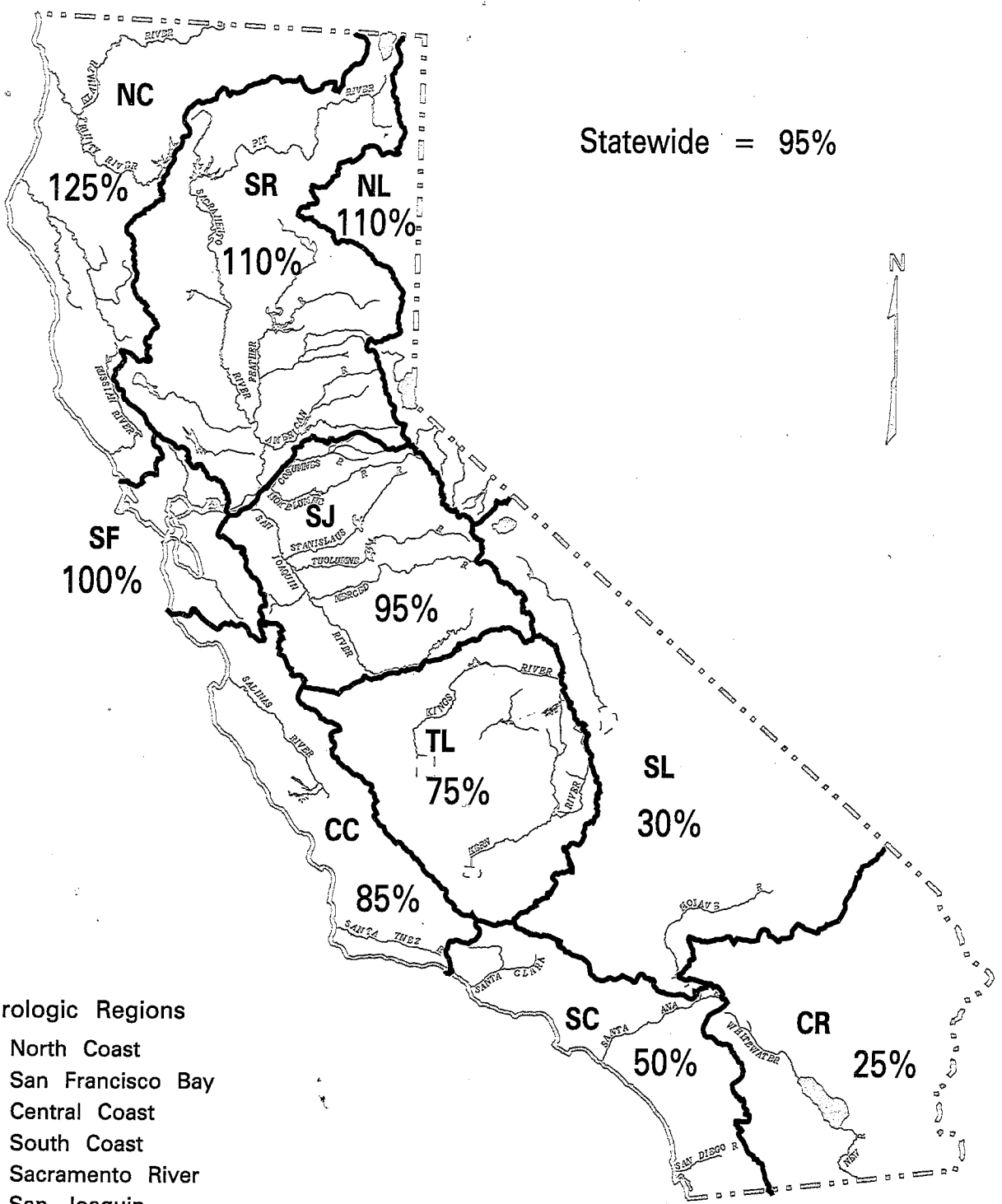
Public Agencies
Buena Vista Water Storage District
East Bay Municipal Utility District
Friant Water Users Association
Kaweah Delta Water Conservation District
Kern Delta Water District
Kings River Conservation District
Lower Tule River Irrigation District
Merced Irrigation District
Modesto Irrigation District
Nevada Irrigation District
North Kern Water Storage District
Northern California Power Agency
Oakdale Irrigation District
Omochumne-Hartnell Water District
Oroville-Wyandotte Irrigation District
Placer County Water Agency
San Joaquin Exchange Contractors Water Association
South San Joaquin Irrigation District
Tri-Dam Project
Tulare Lake Basin Water Storage District
Turlock Irrigation District
Yuba County Water Agency
Private Organizations
J.G. Boswell Company
Kaweah and St. Johns River Association
Kings River Water Association
Tule River Association
State Water Contractors

Municipalities
City of Bakersfield Water Department
City of Los Angeles Department of Water and Power
City and County of San Francisco Hetch Hetchy Water and Power
State Agencies
University of California
Central Sierra Snow Laboratory
Scripps Institution of Oceanography
California Department of Forestry & Fire Protection
California Department of Water Resources
Federal Agencies
U.S. Department of Agriculture
Forest Service(14 National Forests)
Natural Resource Conservation Service
U.S. Department of Commerce
National Weather Service
U.S. Department of Interior
Bureau of Reclamation
Geological Survey, Water Resources
National Park Service(3 National Parks)
U.S. Department of Army
Corps of Engineers
Other Cooperative Programs
Nevada Cooperative Snow Surveys
Oregon Cooperative Snow Surveys

SEASONAL PRECIPITATION

IN PERCENT OF AVERAGE TO DATE

October 1, 1998 through March 31, 1999



Hydrologic Regions

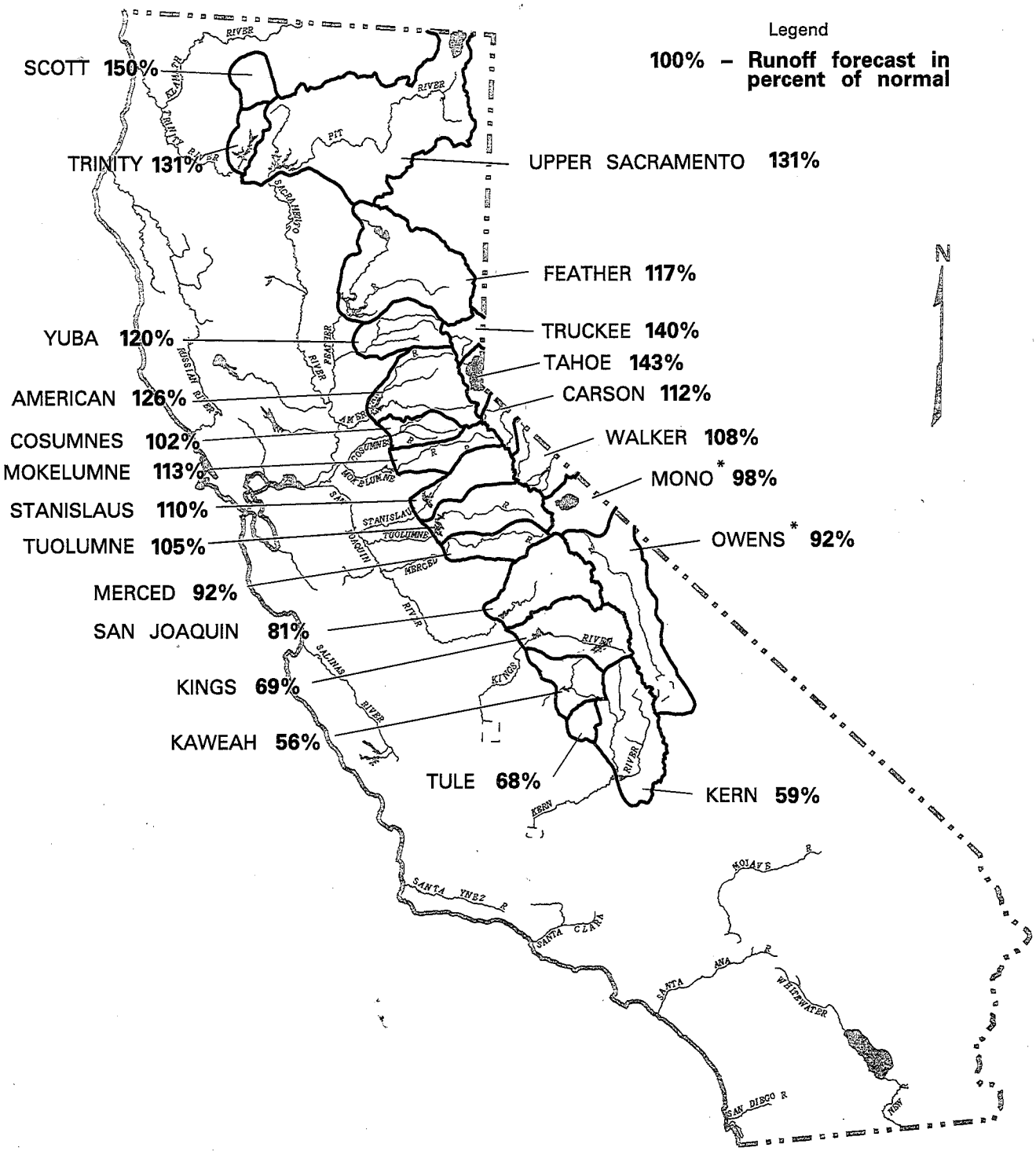
NC – North Coast
SF – San Francisco Bay
CC – Central Coast
SC – South Coast
SR – Sacramento River
SJ – San Joaquin
TL – Tulare Lake
NL – North Lahontan
SL – South Lahontan
CR – Colorado River–Desert

WATER YEAR IS OCTOBER 1 THROUGH SEPTEMBER 30

FORECAST OF APRIL – JULY

UNIMPAIRED SNOWMELT RUNOFF

April 1, 1999



* FORECAST BY DEPARTMENT OF WATER AND POWER, CITY OF LOS ANGELES

SUMMARY OF WATER CONDITIONS

APRIL 1, 1999

After a wet February, March shifted to the dry side for much of the State. Snowpack water content changed little overall during the month with gains in the north and at higher elevations offset by losses at lower elevations, especially in the southern Sierra. Runoff forecasts have been adjusted downward some but water supply prospects remain good for most of the state.

Forecasts of April through July runoff are about 10 percent above average statewide ranging from approximately 140 percent in the north to a rather poor 60 percent in the Tulare Lake region portion of the Southern Sierra. Water year forecasts are generally slightly more as a result of favorable winter runoff. The dropoff in spring runoff percentages as one moves south from the Tuolumne to Kings watersheds is the steepest of record.

Snowpack water content is 110 percent of average statewide compared to 160 percent one year ago. The pack ranges from 150 percent in the north to only about 50 percent in the south in the Kern River watershed.

Precipitation in March was approximately 80 percent of average for the month. The North and Central coast region were above average, whereas the southern Sierra and the southeastern regions of the State were much below average. Seasonal precipitation since October 1 is about 95 percent of average statewide compared to 165 percent last year.

Runoff so far this water year is about 115 percent of average compared to 160 percent one year ago. March runoff was approximately 120 percent of average. Estimated runoff of the eight major rivers of the Sacramento and San Joaquin River regions was 3.7 million acre−feet.

Reservoir storage increased at near normal rates for March and remains at approximately 115 percent of average. This is about the same as last year.

SUMMARY OF WATER CONDITIONS IN PERCENT OF AVERAGE

HYDROLOGIC REGION	PRECIPITATION OCTOBER 1 TO DATE	MARCH 1 SNOW WATER CONTENT	MARCH 1 RESERVOIR STORAGE	RUNOFF OCTOBER 1 TO DATE	APR−JULY RUNOFF FORECAST	WATER YEAR RUNOFF FORECAST
NORTH COAST	125	150	105	115	130	115
SAN FRANCISCO BAY	100	−−	115	120	−−	−−
CENTRAL COAST	85	−−	130	50	−−	−−
SOUTH COAST	50	−−	120	35	−−	−−
SACRAMENTO RIVER	110	130	105	120	125	125
SAN JOAQUIN RIVER	95	100	125	110	110	110
TULARE LAKE	75	60	140	85	70	75
NORTH LAHONTAN	110	110	145	105	130	120
SOUTH LAHONTAN	30	75	105	110	100	105
COLORADO RIVER−DESERT	25	−−	−−	−−	−−	−−
STATEWIDE	95	110	115	120	115	115

APRIL 1, 1999 FORECASTS
APRIL-JULY UNIMPAIRED RUNOFF

HYDROLOGIC REGION and Watershed	Unimpaired Runoff in 1,000 Acre-Feet (1) HISTORICAL 50 Yr Avg (2)	Max of Record	Min of Record	FORECAST Apr-Jul Forecasts	Pct of Avg	80 % Probability Range (1)
SACRAMENTO RIVER						
Upper Sacramento River						
Sacramento River at Shasta Lake (3)	297	702	39	370	125%	
McCloud River at Shasta Lake	392	850	185	490	125%	
Pit River at Shasta Lake	1,056	2,203	480	1,400	133%	
Total Inflow to Shasta Lake	1,801	3,525	726	**2,360**	131%	2,000 - 3,000
Sacramento River above Bend Bridge, near Red Bluff	2,451	5,075	943	**3,050**	124%	2,530 - 4,010
Feather River						
Feather River at Lake Almanor near Prattville (3)	333	675	120	380	114%	
North Fork at Pulga (3)	1,028	2,416	243	1,170	114%	
Middle Fork near Clio (4)	86	518	4	100	116%	
South Fork at Ponderosa Dam (3)	110	267	13	130	118%	
Total Inflow to Oroville Reservoir	1,831	4,676	392	**2,140**	117%	1,800 - 2,860
Yuba River						
North Yuba below Goodyears Bar (3)	286	647	51	340	119%	
Inflow to Jackson Mdws and Bowman Reservoirs (3)	112	236	25	140	125%	
South Yuba at Langs Crossing (3)	233	481	57	290	124%	
Yuba River at Smartville	1,029	2,424	200	**1,230**	120%	1,030 - 1,620
American River						
North Fork at North Fork Dam (3)	262	716	43	330	126%	
Middle Fork near Auburn (3)	522	1,406	100	660	126%	
Silver Creek Below Camino Diversion Dam (3)	173	386	37	220	127%	
Total Inflow to Folsom Reservoir	1,261	3,074	229	**1,590**	126%	1,370 - 2,100
SAN JOAQUIN RIVER						
Cosumnes River at Michigan Bar	128	363	8	**130**	102%	90 - 200
Mokelumne River						
North Fork near West Point (5)	437	829	104	480	110%	
Total Inflow to Pardee Reservoir	459	1,065	102	**520**	113%	450 - 670
Stanislaus River						
Middle Fork below Beardsley Dam (3)	334	702	64	370	111%	
North Fork Inflow to McKays Point Dam (3)	224	503	34	250	112%	
Total Inflow to New Melones Reservoir	699	1,710	116	**770**	110%	660 - 1,000
Tuolumne River						
Cherry Creek & Eleanor Creek near Hetch Hetchy (3)	322	727	97	330	102%	
Tuolumme River near Hetch Hetchy (3)	606	1,392	153	620	102%	
Total Inflow to Don Pedro Reservoir	1,184	2,682	301	**1,240**	105%	1,090 - 1,550
Merced River						
Merced River at Pohono Bridge (3)	362	888	80	330	91%	
Total Inflow to Lake McClure	611	1,587	123	**560**	92%	480 - 750
San Joaquin River						
San Joaquin River at Mammoth Pool (6)	1,014	2,279	235	810	80%	
Big Creek below Huntington Lake (6)	95	264	11	70	74%	
South Fork near Florence Lake (6)	202	511	58	150	74%	
Total Inflow to Millerton Lake	1,212	3,355	262	**980**	81%	800 - 1,260
TULARE LAKE						
Kings River						
North Fork Kings River near Cliff Camp (3)	239	565	50	170	71%	
Total Inflow to Pine Flat Reservoir	1,183	3,114	273	**820**	69%	650 - 1,060
Kaweah River at Terminus Reservoir	276	814	61	**155**	56%	115 - 250
Tule River at Success Reservoir	59	259	2	**40**	68%	25 - 65
Kern River						
Kern River near Kernville (3)	373	1,203	83	220	59%	
Total Inflow to Isabella Reservoir	442	1,657	84	**260**	59%	200 - 380

(1) See inside back cover for definition
(2) All 50 year averages are based on years 1946-1995 unless otherwise not
(3) 50 year average based on years 1941-9
(4) 44 year average based on years 1936-79
(5) 36 year average based on years 1936-7
(6) 45 year average based on years 1936-8

APRIL 1, 1999 FORECASTS
WATER YEAR UNIMPAIRED RUNOFF

Unimpaired Runoff in 1,000 Acre-Feet (1)														
HISTORICAL			DISTRIBUTION								FORECAST			
50 Yr Avg (2)	Max of Record	Min of Record	Oct Thru Jan*	Feb *	Mar *	Apr	May	Jun	Jul	Aug & Sep	Water Year Forecasts	Pct of Avg	80 % Probability Range (1)	
856	1,964	165												
1,184	2,353	577												
3,078	5,647	1,484												
5,896	10,796	2,479	2,315	1,170	1,090	1,000	700	390	270	475	**7,410**	126%	6,970 -	8,180
8,518	17,180	3,294	3,030	1,740	1,580	1,310	900	500	340	600	**10,000**	117%	9,370 -	11,180
780	1,269	366												
2,417	4,400	666												
219	637	24												
291	562	32												
4,526	9,492	994	1,450	940	825	880	760	340	160	195	**5,550**	123%	5,170 -	6,350
564	1,056	102												
181	292	30												
379	565	98												
2,337	4,926	369	695	505	365	460	490	230	50	45	**2,840**	122%	2,630 -	3,260
616	1,234	66												
1,070	2,575	144												
318	705	59												
2,674	6,381	349	620	705	440	560	610	340	80	35	**3,390**	127%	3,160 -	3,930
378	1,253	20	83	159	86	70	42	15	3	2	**460**	122%	415 -	535
626	1,009	197												
736	1,800	129	115	120	85	140	220	140	20	10	**850**	115%	770 -	1,000
471	929	88												
1,131	2,952	155	185	200	125	210	320	190	50	20	**1,300**	115%	1,180 -	1,550
461	1,147	123												
770	1,661	258												
1,857	4,430	383	270	255	170	290	470	390	90	35	**1,970**	106%	1,810 -	2,300
461	1,020	92												
952	2,859	150	110	110	70	140	240	150	30	20	**870**	91%	780 -	1,080
1,337	2,964	308												
112	298	14												
248	653	71												
1,753	4,642	362	195	110	100	210	390	280	100	45	**1,430**	82%	1,240 -	1,740
284	607	58												
1,647	4,294	383	155	75	75	180	340	230	70	35	**1,160**	70%	980 -	1,420
431	1,402	92	50	25	20	45	70	35	5	5	**255**	59%	210 -	360
135	615	16	36	16	11	16	15	7	2	2	**105**	78%	85 -	135
558	1,577	163												
694	2,309	175	130	35	35	65	85	75	35	30	**490**	71%	420 -	630

* Indicates observed runoff

APRIL 1, 1999 FORECASTS
APRIL-JULY UNIMPAIRED RUNOFF

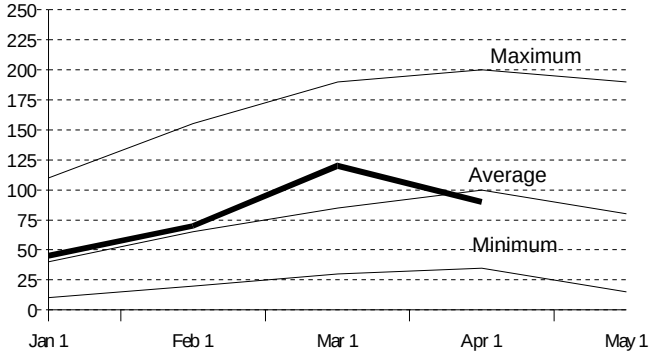
HYDROLOGIC REGION and Watershed	Unimpaired Runoff in 1,000 Acre-Feet (1)				
	HISTORICAL			FORECAST	
	50 Yr Avg (2)	Max of Record	Min of Record	Apr-Jul Forecasts	Pct of Avg
NORTH COAST					
Trinity River					
Total Inflow to Lewiston Lake	642	1,593	80	**840**	131%
Scott River					
Near Fort Jones	200	n/a	n/a	**300**	150%
Klamath River					
Total inflow to Upper Klamath Lake (3)	422	583	277	**800**	190%
NORTH LAHONTAN					
Truckee River					
Lake Tahoe to Farad accretions	264	713	58	**370**	140%
Lake Tahoe Rise (assuming gates closed, in feet)	1.4	3.6	0.2	**2.0**	143%
Carson River					
West Fork at Woodfords	54	135	12	**65**	120%
East Fork near Gardnerville	183	407	43	**200**	109%
Walker River					
West Fork near Coleville	143	330	35	**155**	108%
East Fork near Bridgeport	61	209	7	**65**	107%
SOUTH LAHONTAN					
Owens River					
Total tributary flow to Owens River (4)	226	579	96	**209**	92%

(1) See inside back cover for definition
(2) All 50 year averages are based on years 1946-1995 unless otherwise not
(3) Forecast by U.S. Natural Resources Conservation Service, Portland Oregon, 30 year average based on years 1961-19
April through July forecast
(4) Forecast by Department of Water and Power, City of Los Angele

NORTH COAST REGION

Snowpack Accumulation

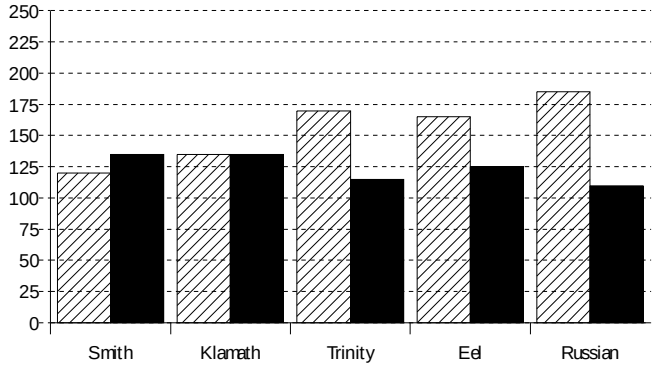
Water Content in % of April 1 Average



SNOWPACK− First of the month measurements made at 15 snow courses indicate an area wide snow water equivalent of 43.8 inches. This is 150 percent of the April 1 average. Last year at this time the pack was holding 56.0 inches of water.

Precipitation

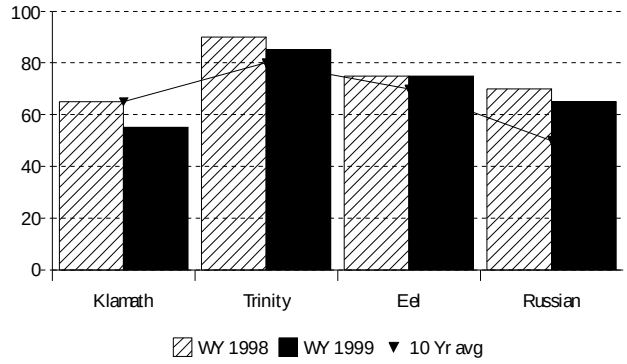
October 1 to date in % of Average



PRECIPITATION − Seasonal precipitation (October 1 through the end of last month) on this area was 125 percent of normal. Precipitation last month was about 120 percent of the monthly average. Seasonal precipitation at this time last year stood at 155 percent of normal.

Reservoir Storage

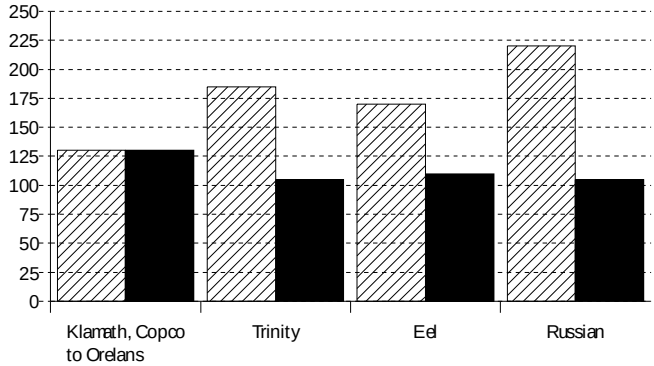
Contents of major reservoirs in % of capacity



RESERVOIR STORAGE− First of the month storage in 7 reservoirs was 2.6 million acre−feet which is 105 percent of average. About 85 percent of available capacity was being used. Storage in these reservoirs at this time last year was 110 percent of average.

Runoff

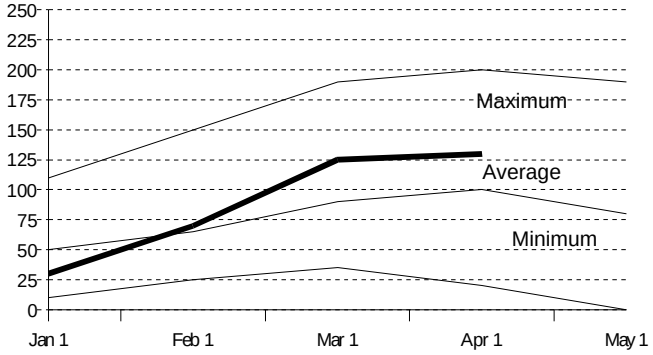
October 1 to date in % of average



RUNOFF −Seasonal runoff of streams draining the area totaled 10.9 million acre−feet which is 115 percent of the average for this period. Last year, runoff for the same period was 160 percent of average.

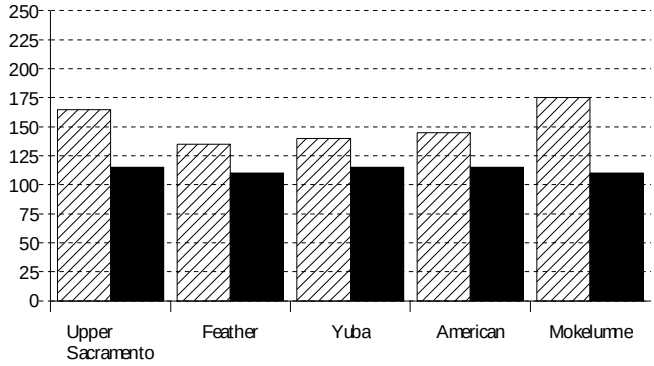
Snowpack Accumulation

Water Content in % of April 1 Average



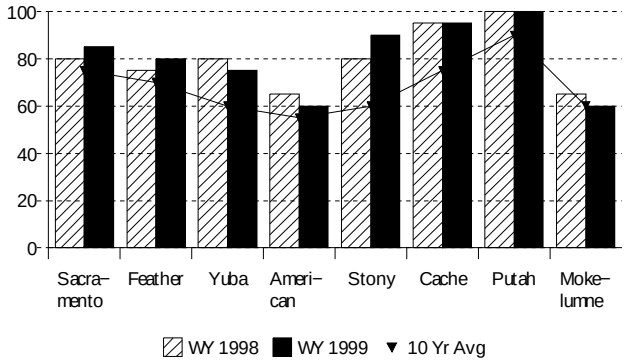
Precipitation

October 1 to date in % of Average



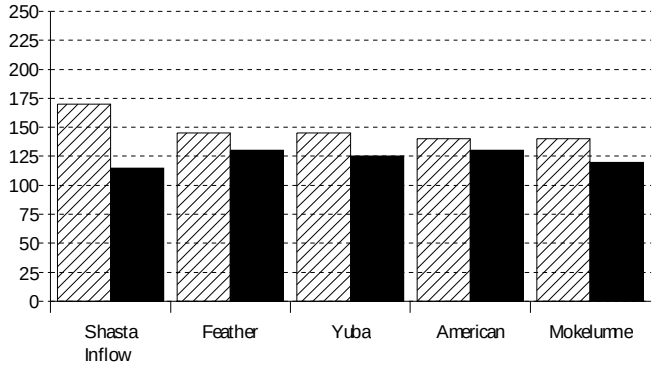
Reservoir Storage

Contents of major reservoirs in % of capacity



Runoff

October 1 to date in % of average



SACRAMENTO RIVER REGION

SNOWPACK− First of the month measurements made at 80 snow courses indicate an area wide snow water equivalent of 37.4 inches. This is 130 percent of the April 1 average. Last year at this time the pack was holding 42.7 inches of water.

PRECIPITATION − Seasonal precipitation (October 1 through the end of last month) on this area was 110 percent of normal. Precipitation last month was about 80 percent of the monthly average. Seasonal precipitation at this time last year stood at 155 percent of normal.

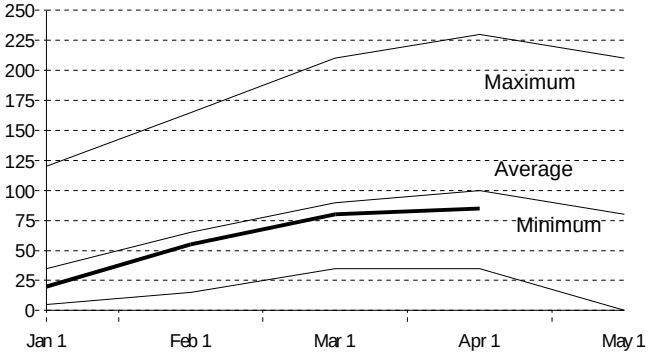
RESERVOIR STORAGE− First of the month storage in 43 reservoirs was 13.2 million acre−feet which is 105 percent of average. About 80 percent of available capacity was being used. Storage in these reservoirs at this time last year was 1105 percent of average.

RUNOFF − Seasonal runoff of streams draining the are totaled 12.9 million acre−feet which is 120 percent of average for this period. Last year, runoff for the same period was 165 percent of average.

The **Sacramento Region 40−30−30 Water Supply Index** is forecast to be xxx assuming median meteorological conditions for the remainder of the year. This classifies the year as " wet" in the Sacramento Valley according to the State Water Resources Control Board

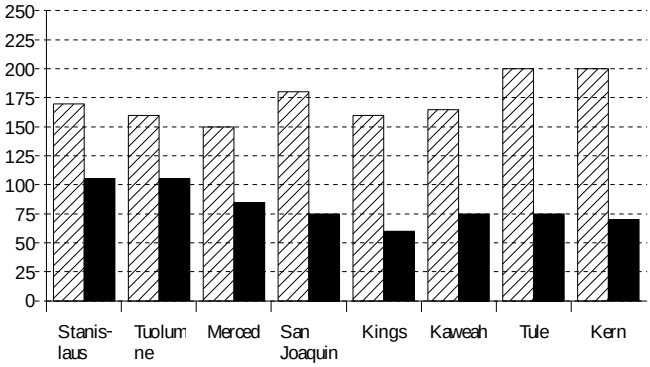
Snowpack Accumulation

Water Content in % of April 1 Average



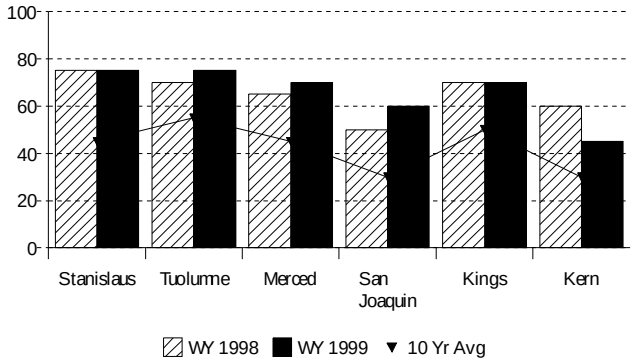
Precipitation

October 1 to date in % of Average



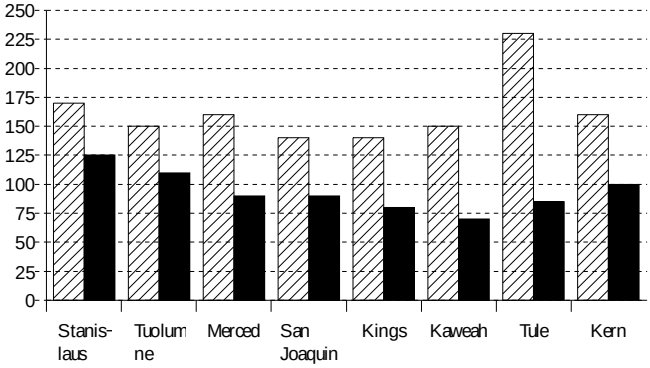
Reservoir Storage

Contents of major reservoirs in % of capacity



Runoff

October 1 to date in % of average



SAN JOAQUIN RIVER AND TULARE LAKE REGIONS

SNOWPACK− First of the month measurements made at 63 **San Joaquin Region** snow courses indicate an area wide snow water equivalent of 32.3 inches. This is 105 percent of the April 1 average. Last year at this time the pack was holding 48.3 inches of water.
At the same time 43 **Tulare Lake Region** snow courses indicated a basin−wide snow water equivalent of 14.4 inches which is 60 percent of the average for April 1. Last year at this time the basin was holding 40.7 inches of water.

PRECIPITATION − Seasonal precipitation (October 1 through the end of last month) on the **San Joaquin Region** was 95 percent of normal. Precipitation last month was about 55 percent of the monthly average. Seasonal precipitation at this time last year stood at 170 percent of normal.
Seasonal precipitation on the **Tulare Lake Region** was 75 percent of normal. Precipitation last month was about 40 percent of the monthly average. Seasonal precipitation at this time last year stood at 180 percent of normal.

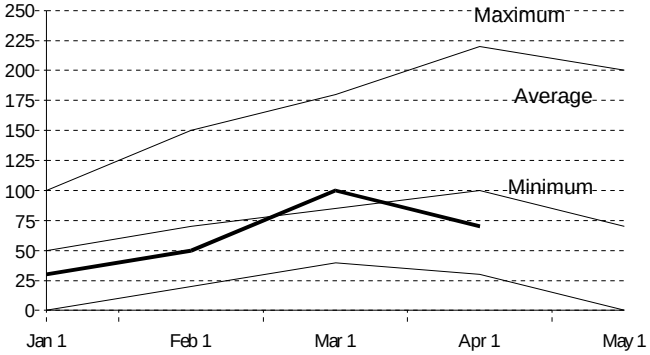
RESERVOIR STORAGE− First of the month storage in 33 **San Joaquin Region** reservoirs was 8.7 million acre−feet which is 125 percent of average. About 75 percent of available capacity was being used. Storage in these reservoirs at this time last year was 120 percent of average.
First of the month storage in 6 **Tulare Lake Region** reservoirs was 1.1 million acre−feet which is 140 percent of average and about 55 percent of available capacity. Storage in these reservoirs at this time last year was 160 percent of average.

RUNOFF− Seasonal runoff of streams draining the **San Joaquin Region** totaled 2.5 million acre−feet which is 110 percent of average for this period. Last year, runoff for the same period was 155 percent of average. Seasonal runoff of streams draining the **Tulare Lake Basin** totaled 679 thousand acre−feet which is 85 percent of average for this period. Last year runoff for this same period was 155 percent of average.

The **San Joaquin Region 60−20−20 Water Supply Index** is forecast to be xx assuming median meteorological conditions. This classifies the year as "above normal" in the San Joaquin Region according to the State Water Resources Control Board.

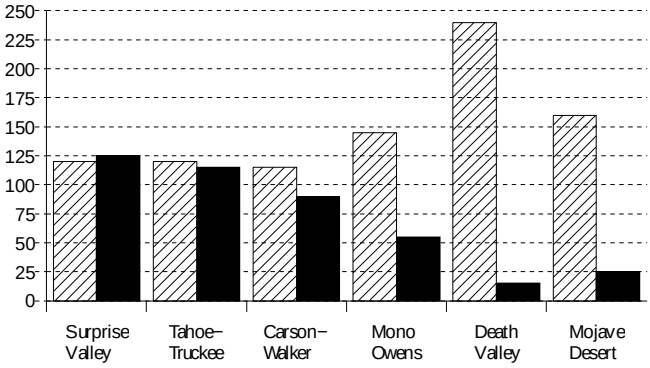
Snowpack Accumulation

Water Content in % of April 1 Average



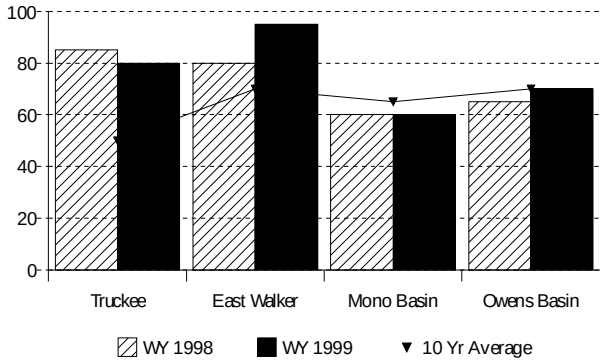
Precipitation

October 1 to date in % of Average



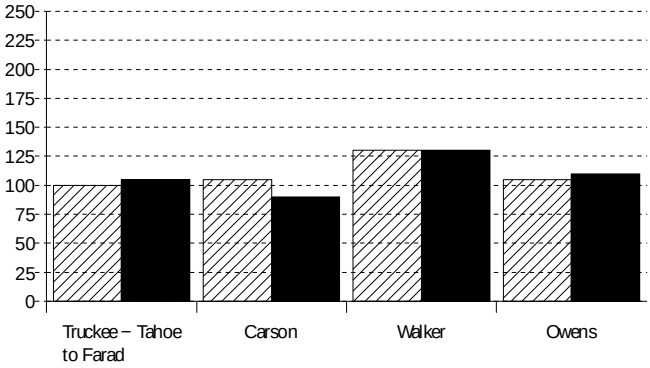
Reservoir Storage

Contents of major reservoirs in % of capacity



Runoff

October 1 to date in % of average



NORTH AND SOUTH LAHONTAN REGIONS

SNOWPACK– First of the month measurements made at 22 **North Lahontan snow** courses indicate an area wide snow water equivalent of 28.3 inches. This is 110 percent of the April 1 average. Last year at this time the pack was holding 34.8 inches of water. At the same time 20 **South Lahontan Region** snow courses indicated a basin–wide snow water equivalent of 16.4 inches which is 75 percent of the average for April 1. Last year at this time the basin was holding 31.4 inches of water.

PRECIPITATION – Seasonal precipitation (October 1 through the end of last month) on the **North Lahontan** was 110 percent of normal. Precipitation last month was about 65 percent of the monthly average. Seasonal precipitation at this time last year stood at 120 percent of normal.
Seasonal precipitation on the **South Lahontan** was 30 percent of normal. Precipitation last month was about 20 percent of the monthly average. Seasonal precipitation at this time last year stood at 165 percent of normal.

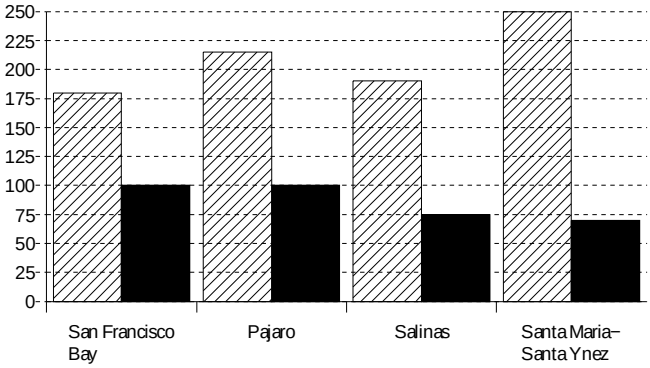
RESERVOIR STORAGE– First of the month storage in 5 **North Lahontan** reservoirs was 879 thousand acre–feet which is 145 percent of average. About 80 percent of available capacity was being used. Storage in these reservoirs at this time last year was 155 percent of average. Lake Tahoe was 4.8 feet above its natural rim on April 1.
First of the month storage in 8 **South Lahontan** reservoirs was 286 thousand acre–feet which is 105 percent of average and about 70 percent of available capacity. Storage in these reservoirs at this time last year was 65 percent of average.

RUNOFF– Seasonal runoff of streams draining the **North Lahontan Region** totaled 291 thousand acre–feet which is 105 percent of average for this period. Last year, runoff for the same period was 110 percent of average.

Seasonal runoff of the Owens River in the **South Lahontan** totaled 72 thousand acre–feet which is 110 percent of average for this period. Last year runoff for this same period was 110 percent of average.

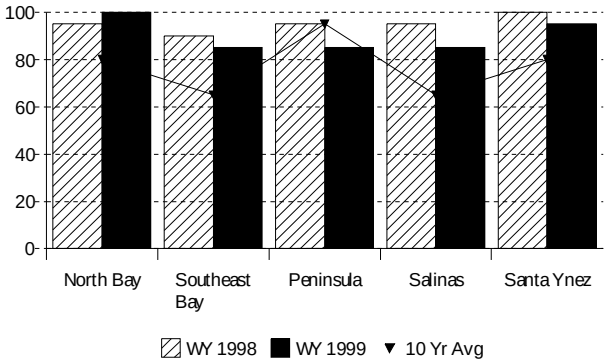
Precipitation

October 1 to date in % of Average



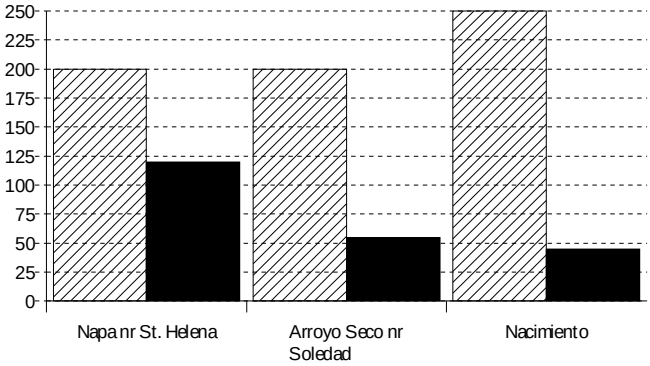
Reservoir Storage

Contents of major reservoirs in % of capacity



Runoff

October 1 to date in % of average



SAN FRANCISCO BAY AND CENTRAL COAST REGIONS

PRECIPITATION − Seasonal precipitation (October 1 through the end of last month) on the **San Francisco Bay Region** was 100 percent of normal. Precipitation last month was about 95 percent of the monthly average. Seasonal precipitation at this time last year stood at 180 percent of normal.

Seasonal precipitation on the **Central Coast Region** was 85 percent of normal. Precipitation last month was about 125 percent of the monthly average. Seasonal precipitation at this time last year stood at 220 percent of normal.

RESERVOIR STORAGE− First of the month storage in 18 **San Francisco Bay Region** reservoirs was 601 thousand acre−feet which is 115 percent of average. About 85 percent of available capacity was being used. Storage in these reservoirs at this time last year was 125 percent of average.

First of the month storage in 6 **Central Coast Region** reservoirs was 860 thousand acre−feet which is 130 percent of average and about 90 percent of available capacity. Storage in these reservoirs at this time last year was 130 percent of average.

RUNOFF− Seasonal runoff of the Napa River in the **San Francisco Bay Region** totaled 73 thousand acre−feet which is 120 percent of average for this period. Last year, runoff for the same period was 200 percent of average.

Seasonal runoff of streams draining the **Central Coast Region** totaled 132 thousand acre−feet which is 50 percent of average for this period. Last year runoff for this same period was 240 percent of average.

SOUTH COAST AND COLORADO RIVER REGIONS

PRECIPITATION − October through January (seasonal) precipitation on the **South Coast Region** was 48 percent of normal. March precipitation was 50 percent of the monthly average. Seasonal precipitation at this time last year was 200 percent of normal. Seasonal precipitation on the **Colorado River−Desert Region** was 25 percent of normal. Precipitation in March was 0 percent of average. Seasonal precipitation at this time last year stood at 180 percent of average.

RESERVOIR STORAGE − April 1 storage in 29 major **South Coast Region** reservoirs was 1.6 million acre−feet or 120 percent of average. About 80 percent of available capacity was being used. Storage in these reservoirs at this time last year was 130 percent of average.
On March 1 combined storage in Lakes Powell, Mead, Mohave and Havasu was about 48 million acre−feet or about 128 percent of average. About 90 percent of available capacity was in use. Last year at this time, these reservoirs were storing 130 percent of average.

RUNOFF − Seasonal runoff from selected **South Coast Region** streams totaled 18 thousand acre−feet which is 40 percent of average. Seasonal runoff from these streams last year was 150 percent of average.

COLORADO RIVER − The April −July inflow to Lake Powell is forecast to be xx million acre−feet, which is 84 percent of average. The April 1 snowpack in the Upper Colorado River basin was 85 percent of average, highest in the Green at 107 percent and lowest in the Animas at 69 percent.

CENTRAL VALLEY PROJECT

.Based on April 1 conditions, Bureau of Reclamation Water Year forecasts for unimpaired runoff to CVP reservoirs are: Trinity−−1.52 MAF (125% of average), Shasta−−7.49 MAF (135% of average), American−−3.44 MAF (130% of average), Stanislaus−−1.32 MAF (115% of average), and San Joaquin above Friant−−1.35 MAF (76% of average). April−July forecasts for unimpaired runoff are: Trinity−−0.88 MAF (146% of average), Shasta−−2.43 MAF (140% of average), American−−1.64 MAF (129% of average), Stanislaus−−0.80 MAF (114% of average), and San Joaquin above Friant−−0.91 MAF (72% of average).

As of March 31, 1999 CVP storage was 9.5 million acre feet which is an increase of 0.1 million acre feet compared to one year ago, and is approximately 118% of normal for that date.

The Bureau of Reclamation last updated water allocations for the CVP contractors on March 16, 1999. Based on conservative (90% probability of exceedance) water supply forecasts prepared from information available March 1, 1999 CVP water allocations were: Agricultural contractors: North of Delta−100%; South of Delta−70%; Urban contractors−95%; Sacramento River water rights and San Joaquin Exchange Contractors− 100%; Wildlife Refuges−100%; Stanislaus River contractors−60 kaf; Friant contractors− 75% Class I, 0% Class II. A water allocation update will be announced during April.

STATE WATER PROJECT

The State Water Project has approved delivery of 100% of the 3.2 million acre−feet of contractor's requests for 1999. This approval considered several factors including the existing storage in SWP reservoirs, the March forecast of runoff including a conservative projection of hydrology and water supply expected to develop during the 1999−00 water year, SWP operational constraints, and 1999 contractor demands.

MAJOR WATER DISTRIBUTION PROJECTS
RESERVOIR STORAGE

(Averages based on period record)

Reservoir	Capacity 1,000 AF	Average Storage 1,000 AF	Storage at End of MARCH 1998 1,000 AF	1999 1,0000 AF	Percent Average	Percent Capacity
STATE WATER PROJECT						
Lake Oroville	3,538	2,817	2,812	2,941	104%	83%
San Luis Reservoir (SWP)	1,062	972	1,063	1,062	109%	100%
Lake Del Valle	77	37	40	37	100%	48%
Lake Silverwood	73	67	64	70	106%	96%
Pyramid Lake	171	159	164	167	105%	98%
Castaic Lake	324	283	320	269	95%	83%
Perris Lake	132	116	111	124	106%	94%
CENTRAL VALLEY PROJECT						
Clair Engle Lake	2,448	1,993	2,231	2,096	105%	86%
Lake Shasta	4,552	3,774	3,553	3,863	102%	85%
Whiskeytown Lake	241	213	207	210	99%	87%
Folsom Lake	977	636	680	615	97%	63%
New Melones Reservoir	2,420	1,538	1,999	1,997	130%	83%
Millerton Lake	520	307	426	459	149%	88%
San Luis Reservoir (CVP)	971	827	965	966	117%	99%
COLORADO RIVER PROECT						
Lake Mead	26,159	19,651	25,046	24,662	126%	94%
Lake Powell	25,002	14,946	20,273	20,916	140%	84%
Lake Mohave	1,810	1,639	1,656	1,678	102%	93%
Lake Havasu	619	548	542	541	99%	87%
EAST BAY MUNICIPAL UTILITY DISTRICT						
Pardee Reservoir	198	179	199	175	98%	88%
Camanche Reservoir	417	260	239	281	108%	67%
East Bay (4 reservoirs)	151	132	143	139	105%	92%
CITY AND COUNTY OF SAN FRANCISCO						
Hetch-Hetchy Reservoir	360	123	136	204	166%	57%
Cherry Lake	268	109	138	203	186%	76%
Lake Eleanor	26	10	16	16	150%	59%
South Bay/Peninsula (4 res.)	225	175	213	209	119%	93%
CITY OF LOS ANGELES (D.W.P.)						
Lake Crowley	183	130	130	135	104%	74%
Grant Lake	48	29	40	39	135%	81%
Other Aqueduct Storage (6 res.)	83	77	62	58	75%	70%

TELEMETERED SNOW WATER EQUIVATENTS

APRIL 1, 1999

(Averages Based on Period Record)

BASIN NAME STATION NAME	ELEV	April 1 AVERAGE	Inches of Water Equivalent APR 1	Percent of Average	24 HRS Previous	1 Week Previous
TRINITY RIVER						
Peterson Flat	7150’	29.2	42.0	144%	41.5	39.6
Red Rock Mountain	6700’	39.6	49.0	124%	49.6	50.3
Bonanza King	6450’	40.5	48.8	121%	48.2	47.0
Shimmy Lake	6200’	40.3	67.6	168%	67.1	61.0
Middle Boulder 3	6200’	28.3	—	—	—	—
Highland Lakes	6030’	29.9	48.5	162%	48.2	46.3
Scott Mountain	5900’	16.0	31.8	199%	31.4	30.4
Mumbo Basin	5700’	22.4	41.6	186%	41.4	40.8
Big Flat	5100’	15.8	29.4	186%	29.1	28.0
SACRAMENTO RIVER						
Cedar Pass	7100’	18.1	26.9	149%	26.5	25.4
Blacks Mountain	7100’	12.7	18.0	142%	18.0	18.0
Sand Flat	6750’	42.4	45.4	107%	45.1	43.8
Medicine Lake	6700’	32.6	48.7	149%	48.5	47.4
Adin Mountain	6350’	13.6	20.2	149%	20.2	20.7
Snow Mountain	5950’	27.0	57.8	214%	57.1	56.5
Slate Creek	5600’	29.0	39.7	137%	39.5	38.2
Stouts Meadow	5400’	36.0	52.0	144%	51.5	50.2
FEATHER RIVER						
Kettle Rock	7300’	25.5	45.4	178%	45.0	44.2
Grizzly Ridge	6900’	29.7	41.5	140%	41.3	40.4
Pilot Peak (DWR)	6800’	52.6	60.0	114%	60.0	59.5
Gold Lake	6750’	36.5	59.2	162%	58.7	58.3
Humbug	6500’	28.0	51.8	185%	51.5	50.9
Rattlesnake	6100’	14.0	22.3	159%	22.3	23.8
Bucks Lake	5750’	44.7	51.4	115%	50.6	49.6
Four Trees	5150’	20.0	17.8	89%	17.3	18.4
EEL RIVER						
Noel Spring	5100’	—	5.4	—	5.4	6.4
Plaskett Meadows	6000’	—	—	—	—	—
YUBA & AMERICAN RIVERS						
Lake Lois	8800’	39.5	—	—	—	—
Schneiders	8750’	34.5	57.0	165%	56.3	55.2
Caples Lake (DWR)	7800’	30.9	39.4	127%	39.0	39.2
Alpha (Smud)	7600’	35.9	50.3	140%	49.5	49.5
Beta	7600’	35.9	48.9	136%	48.6	48.2
Meadow Lake	7200’	55.5	79.0	142%	78.4	76.4
Silver Lake (DWR)	7100’	22.7	37.2	164%	37.2	37.2
Central Sierra Snow Lab	6950’	33.6	50.5	150%	50.5	51.6
Huysink	6600’	42.6	46.0	108%	45.5	45.4
Van Vleck	6700’	35.9	55.5	155%	54.9	55.6
Robbs Saddle	5900’	21.4	27.9	130%	27.5	28.2
Greek Store	5600’	21.0	26.3	125%	25.8	27.0
Blue Canyon	5280’	9.0	2.0	23%	2.0	4.8
Robbs Powerhouse	5150’	5.2	3.3	63%	2.6	6.3
MOKELUMNE & STANISLAUS RIVERS						
Deadman Creek	9250’	37.2	27.1	73%	27.0	27.4
Highland Meadow	8800’	47.9	46.8	98%	46.6	46.1
Gianelli Meadow	8350’	55.5	48.7	88%	48.1	47.8
Lower Relief Valley	8100’	41.2	46.2	112%	46.2	45.5
Blue Lakes	8000’	33.1	35.9	108%	35.3	34.6
Mud Lake	7900’	44.9	—	—	—	61.2
Stanislaus Meadow	7750’	47.5	53.0	112%	52.7	52.6
Bloods Creek	7200’	35.5	35.5	100%	35.3	35.3
Black Springs	6500’	32.0	31.8	99%	31.3	31.4
TUOLUMNE & MERCED RIVERS						
Dana Meadows	9800’	27.7	28.1	101%	28.1	27.5
Slide Canyon	9200’	41.1	45.8	111%	45.8	44.5
Snow Flat	8700’	44.1	—	—	—	—
Tuolumne Meadows	8600’	22.6	21.4	95%	21.4	22.1
Horse Meadow	8400’	48.6	49.1	101%	49.1	47.8
Ostrander Lake	8200’	34.8	37.6	108%	37.6	35.6
Paradise Meadow	7650’	41.3	44.2	107%	44.2	44.9
Gin Flat	7050’	34.2	25.4	74%	25.0	25.3
Lower Kibbie Ridge	6600’	27.4	25.4	93%	24.7	25.4

TELEMETERED SNOW WATER EQUIVATENTS

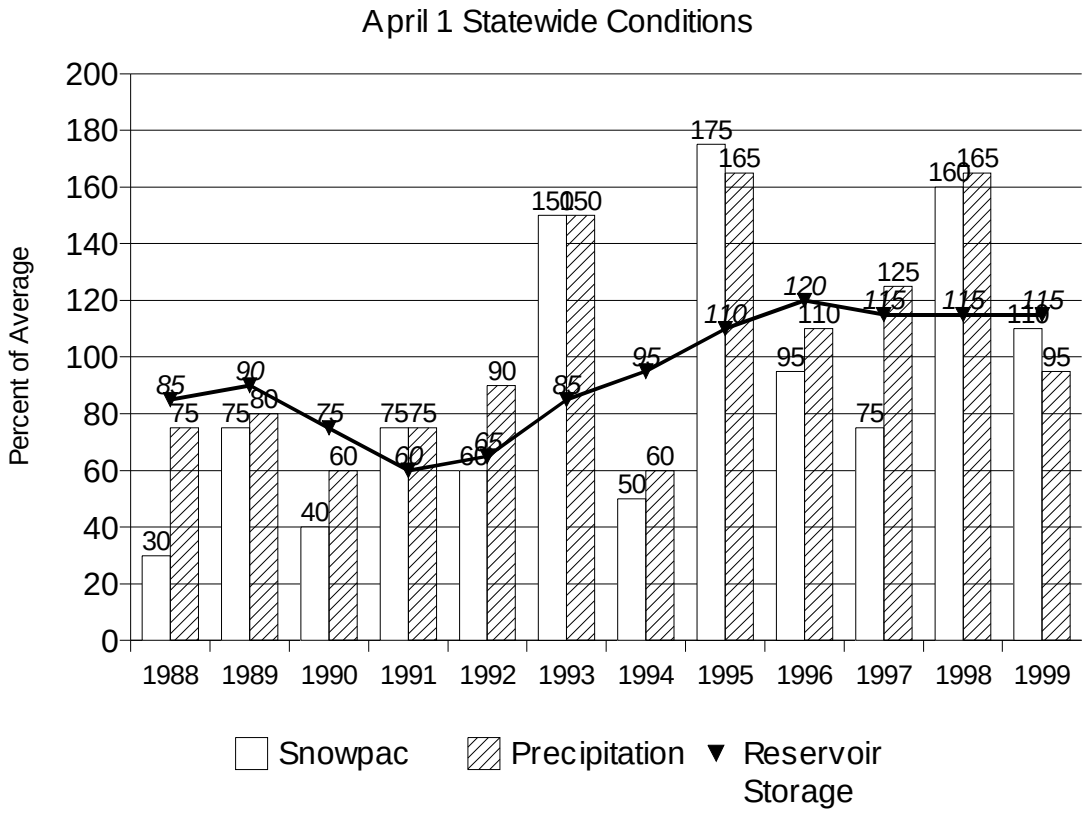
APRIL 1, 1999

(Averages Based on Period Record)

BASIN NAME STATION NAME	ELEV	April 1 AVERAGE	APR1	Inches of Water Equivalent Percent of Average	24 HRS Previous	1 Week Previous
SAN JOAQUIN RIVER						
Volcanic Knob	10100’	30.1	24.2	80%	23.5	23.5
Agnew Pass	9450’	32.3	28.6	89%	28.6	28.2
Kaiser Point	9200’	37.8	22.8	60%	22.8	23.5
Green Mountain	7900’	30.8	22.4	73%	22.3	24.0
Tamarack Summit	7600’	30.5	19.7	65%	19.3	21.0
Chilkoot Meadow	7150’	38.0	30.6	81%	30.4	30.7
Huntington Lake (USBR)	7000’	20.1	19.1	95%	18.7	20.3
Graveyard Meadow	6900’	18.8	15.5	82%	15.2	18.0
Poison Ridge	6900’	28.9	17.6	61%	16.9	19.3
KINGS RIVER						
Bishop Pass	11200’	34.0	18.7	55%	18.7	18.0
Charlotte Lake	10400’	27.5	19.2	70%	19.1	18.9
State Lakes	10400’	29.0	22.8	79%	22.5	22.7
Mitchell Meadow	10375’	32.9	24.5	74%	23.7	22.9
Blackcap Basin	10300’	34.3	21.6	63%	21.6	21.6
Upper Burnt Corral	9700’	34.6	28.8	83%	28.1	28.1
West Woodchuck Meadow	9100’	32.8	—	—	—	—
Big Meadows (DWR)	7600’	25.9	—	—	—	—
KAWEAH & TULE RIVERS						
Quaking Aspen	7200’	21.0	8.3	39%	8.3	11.0
Giant Forest (Corps)	6400’	10.0	1.3	13%	0.0	0.0
KERN RIVER						
Upper Tyndall Creek	11500’	27.7	13.3	48%	12.6	12.8
Crabtree Meadow	10700’	19.8	7.5	38%	7.7	7.7
Chagoopa Plateau	10300’	21.8	13.5	62%	12.9	12.9
Pascoes	9150’	24.9	22.4	90%	21.4	20.8
Tunnel Guard Station	8950’	15.6	2.6	17%	3.2	5.5
Wet Meadows	8900’	30.3	13.7	45%	13.6	13.5
Casa Vieja Meadows	8400’	20.9	11.1	53%	11.1	11.8
Beach Meadows	7650’	11.0	0.5	5%	0.0	0.0
SURPRISE VALLEY AREA						
Dismal Swamp	7050’	29.2	40.9	140%	40.6	37.7
TRUCKEE RIVER						
Mount Rose Ski Area	8850’	38.5	50.6	131%	50.6	49.7
Independence Lake (NRCS)	8450’	41.4	59.6	144%	59.5	58.4
Big Meadows (NRCS)	8700’	25.7	27.7	108%	27.7	27.7
Independence Camp	7000’	21.8	26.2	120%	26.0	26.5
Independence Creek	6500’	12.7	20.8	164%	20.7	20.9
LAKE TAHOE BASIN						
Heavenly Valley	8800’	28.1	36.3	129%	36.1	35.9
Hagans Meadow	8000’	16.5	24.5	148%	24.3	23.5
Marlette Lake	8000’	21.1	31.9	151%	31.9	32.0
Echo Peak 5	7800’	39.5	56.0	142%	54.7	56.6
Rubicon Peak 2	7500’	29.1	45.9	158%	45.8	44.7
Ward Creek 3	6750’	39.4	43.1	109%	42.5	43.9
Fallen Leaf Lake	6300’	7.0	3.2	46%	3.2	5.3
CARSON RIVER						
Ebbetts Pass	8700’	38.8	43.7	113%	43.4	42.1
Poison Flat	7900’	16.2	19.2	119%	19.1	19.1
WALKER RIVER						
Virginia Lakes	9200’	20.3	16.4	81%	16.4	16.1
Lobdell Lake	9200’	17.3	15.1	87%	15.1	15.1
Sonora Pass Bridge	8750’	26.0	29.2	112%	29.2	28.4
Leavitt Meadows	7200’	8.0	11.0	138%	11.1	11.8
OWENS RIVER/MONO LAKE						
Gem Pass	10750’	31.7	29.4	93%	29.4	29.4
Sawmill	10300’	19.4	13.7	71%	13.1	13.1
Cottonwood Lakes	10200’	11.6	8.9	77%	8.9	8.8
Big Pine Creek	9800’	17.9	9.8	55%	9.8	10.4
South Lake	9600’	16.0	10.4	65%	10.4	10.7
Mammoth Pass (USBR)	9500’	42.4	34.8	82%	34.3	34.0
Rock Creek Lakes	10000’	14.0	9.5	68%	9.5	10.0

NORMAL SNOWPACK ACCUMULATION EXPRESSED AS A PERCENT OF APRIL 1ST AVERAGE

AREA	JANUARY	FEBRUARY	MARCH	APRIL	MAY
Central Valley North	45%	70%	90%	100%	75%
Central Valley South	45%	65%	85%	100%	80%
North Coast	40%	60%	85%	100%	80%



SNOWLINES

Its not too late to register for the 1999 Western Snow Conference annual meeting. It will be held April 19−22 at South Lake Tahoe, CA. For further information regarding the Western Snow Conference contact Frank Gehrke at 916−574−2635 or gridley@water.ca.gov.
Information is available on the web at http://snobear.colorado.edu/WSC/WSC.html.

DEPICTED on this months cover DWR snow gaugers Jim King (l) and Walt Hoffman (r) take a well−deserved break on Bighorn Plateau at 11,500 feet in the Kern River watershed during the March 1 survey in 1998. Photo by Jim King.

EVALUATION copies of the Sandia Snow Detectors have been received. These units will be installed at selected locations once their performance has been verified at Sandia National Labs. Five existing sensor sites will be fitted with the new detectors during the upcoming field season. The performance of the new detectors will be evaluated next winter and improvements incorporated in subsequent production units.

SNOWPACK - Snow data is a major index of spring and summer runoff from Sierra Nevada watersheds. April 1 data historically reflects the magnitude of the snowpack at or near the maximum seasonal accumulation. Averages are based on April 1 data for the period 1946-1995 (50 years, except for data sites established after 1941).

PRECIPITATION - Averages are based on April 1 data for the period 1941-1990 (50 years, except for data sites established after 1941).

RUNOFF AND FORECASTS - Runoff data and runoff forecasts are shown as unimpaired values. Unimpaired runoff represents the natural water production of a river basin, unaltered by upstream diversions, storage, or by export or import of water to or from other watersheds. Forecast of runoff assumes median conditions subsequent to the date of forecast.

Runoff probability ranges are statistically derived from historical data. The 80 percent probability range is comprised of the 90 percent exceedence level value and the 10 percent exceedence level value. This means that actual runoff should fall within the stated limits eight times out of ten.

Runoff averages for most streams are based on the period 1941-1990. For more details contact California Cooperative Snow Surveys, P.O. Box 942836, Sacramento, CA 94236-0001, (916) 574-2635 or gridley@water.ca.gov.

INDICES OF WATER AVAILABILITY

<u>The Sacramento River Hydrologic Region 40-30-30 Water Supply Index</u>. The values *40-30-30* represent the percentage weight given to the three variables in the formula for the index. The first variable is the forecasted unimpaired runoff from April through July (*40 Percent*). The second variable is the forecasted unimpaired runoff from October through March (*30 Percent*). The third variable is the previous year's index with a cap to account for required flood control releases during wet years. The basins used in this computation are those used in the Sacramento River water year unimpaired runoff.

<u>The Sacramento River water year unimpaired runoff</u> is the sum of: Sacramento River above Bend Bridge, Feather River Inflow to Lake Oroville, Yuba River near Smartville and American River Inflow to Folsom Lake.

<u>The San Joaquin River Hydrologic Region 60-20-20 Water Supply Index</u>. In a similar manner, the values *60-20-20* represents the percentage weights on April through July runoff, October through March runoff and previous year's index. The San Joaquin River unimpaired runoff is the sum of: Stanislaus River Inflow to New Melones Lake, Tuolumne River Inflow to New Don Pedro Reservoir, Merced River Inflow to Lake McClure and San Joaquin River Inflow to Millerton Lake.

<u>Runoff of the eight major rivers of the Sacramento and San Joaquin Regions</u> is the sum of the runoff in the eight major rivers used in the two above indices.

State of California – The Resources Agency
DEPARTMENT OF WATER RESOURCES
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Sacramento, CA 94236-0001

First Class