California Cooperative
Snow Surveys
Bulletin 120-91

Water Conditions in California

Report 3 April 1, 1991

DEPARTMENT OF WATER RESOURCES
STATE OF CALIFORNIA

STATE OF CALIFORNIA

Department of Water Resources

Division of Flood Management

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COOPERATING AGENCIES

Public Agencies

Buena Vista Water Storage District
Central California Irrigation 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
Sacramento Municipal Utility District
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 River Association
Kings River Water Association
St. Johns River Association
Tule River Association
U.S. Tungsten Corporation
State Water Contractors

Public Utilities

Pacific Gas and Electric Company
Southern California Edison Company
Sierra Pacific Power Company

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

California Department of Forestry
& Fire Protection
California Department of Water Resources

Federal Agencies

U.S. Department of Agriculture
Forest Service(14 National Forests)
Pacific Southwest Forest and Range
Experiment Station
Soil Conservation Service
U.S. Department of Commerce
National Weather Service
U.S. Department of Interior
Bureau of Reclamation
Geological Survey, Water Resources
Division
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

SUMMARY OF WATER CONDITIONS

APRIL 1, 1991

The copious precipitation at the end of February continued during most of March. One official termed it "an entire winter in March ". Heavy rain and snowfall increased runoff and storage amounts dramatically but failed to bring California's water supply back to normal. With precipitation, runoff and reservoir storage amounts well below normal, conservation measures are still appropriate.

FORECASTS of snow melt runoff increased by impressive amounts as a result of March's heavy precipitation but are still only about two thirds of normal. Greatest amounts of April through July runoff is expected in the streams of the southern half of the Central Valley. Least amounts are forecast for North Lahontan streams.

SNOWPACK conditions improved dramatically during March, with many stations recording triple March normals. Statewide, the pack's snow water equivalent rose from 15 to 75 percent of average during the month. The month's storms favored the southern portion of the Sierra. The snowpack of the Tulare Lake Basin rose by 80 percent while that of the North Coast rose by 40 percent. Appreciable melt-off had not started at month's end.

PRECIPITATION, statewide, during March was almost three times normal. Statewide precipitation for the water year now stands at about 75 percent of normal. This is in contrast to conditions at the end of February when the comparable figure was 35 percent of normal. Some stations reported record March rainfall amounts. Last month joins March 1983 as being two of the wettest Marches in recent history. The previously dry Central and South Coast areas now have above average seasonal precipitation amounts.

RUNOFF increased in all hydrologic areas. Statewide runoff now stands at 30 percent of average. This is up from 15 percent of average last month. At that time, San Francisco Bay and Central Coast streams had almost ceased flowing; today they have had about 45 percent of average seasonal flows.

RESERVOIR STORAGE increased over 10 percent, almost four million acre-feet during March. Nearly dry one month ago, Central Coast reservoirs are now holding about 40 percent of average. Smallest monthly increases occurred in the Lahontan and North Coast reservoirs.

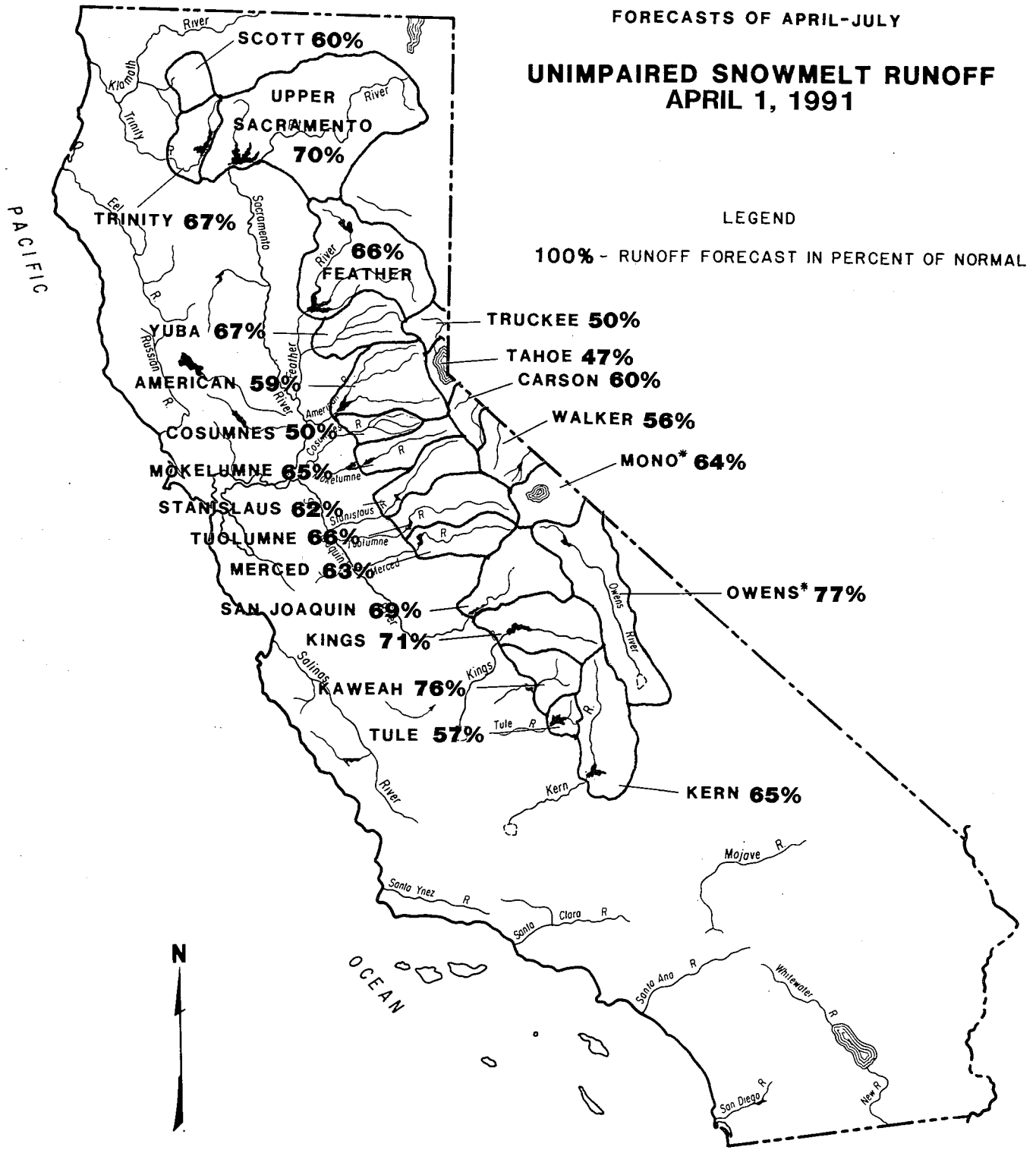
SUMMARY OF WATER CONDITIONS

IN PERCENT OF AVERAGE

HYDROGRAPHIC AREA	PRECIPITATION OCTOBER 1 TO DATE	SNOW WATER CONTENT	RESERVOIR STORAGE	OCTOBER 1 RUNOFF TO DATE	APRIL-JULY RUNOFF FORECAST	WATER YEAR RUNOFF FORECAST
NORTH COAST	60	60	60	30	65	45
SAN FRANCISCO BAY	80	--	75	45	--	--
CENTRAL COAST	105	--	40	45	--	--
SOUTH COAST	105	--	100	50	--	--
SACRAMENTO BASIN	70	65	60	35	65	50
SAN JOAQUIN BASIN	75	80	55	25	65	50
TULARE LAKE BASIN	95	90	45	40	70	60
NORTH LAHONTAN	70	70	20	35	55	45
SOUTH LAHONTAN	95	80	85	50	70	65
COLORADO DESERT	105	--	--	--	--	--
STATEWIDE	75	75	60	30	65	50

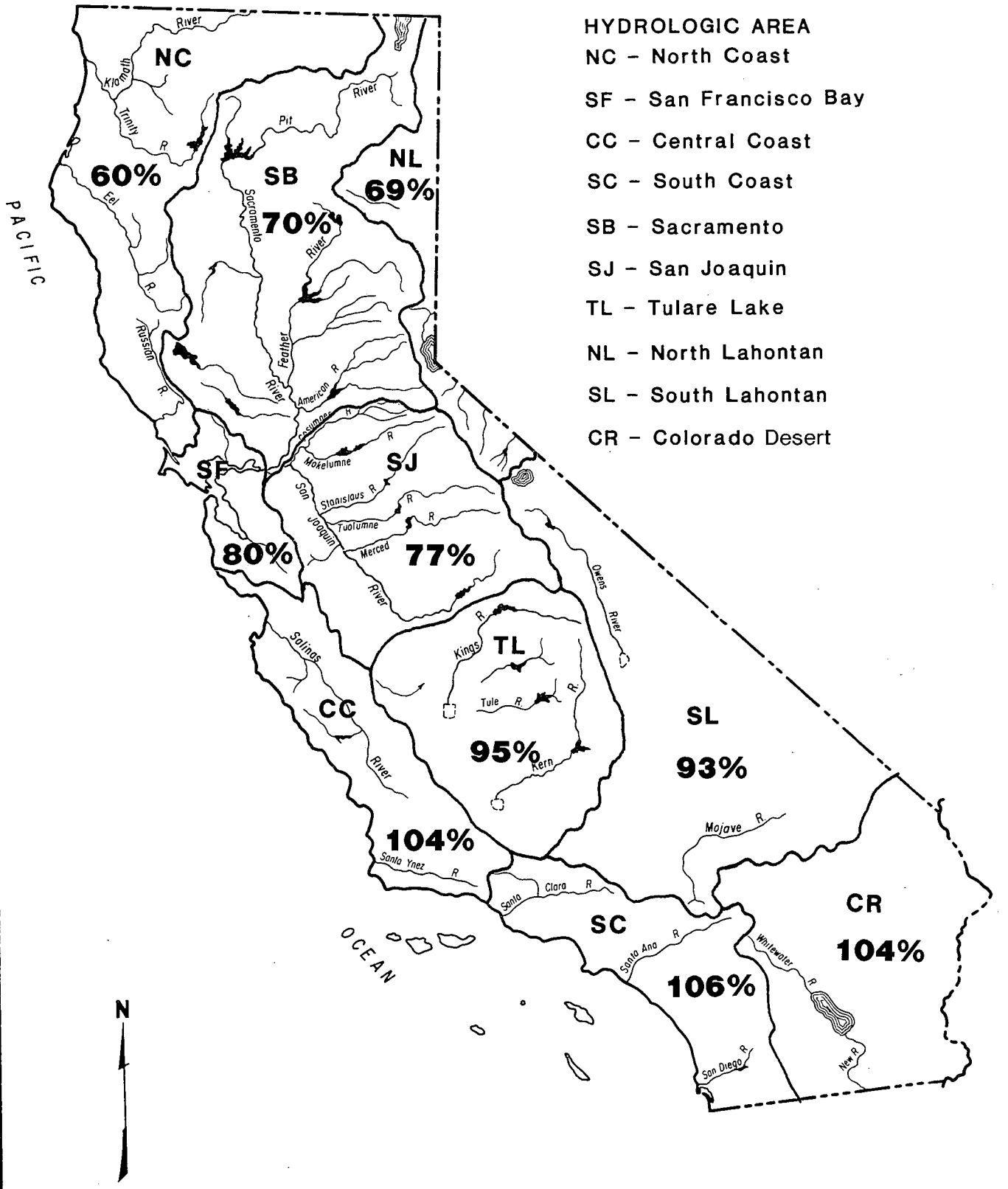
FORECASTS OF APRIL-JULY

UNIMPAIRED SNOWMELT RUNOFF
APRIL 1, 1991



* FORECAST BY DEPARTMENT OF WATER AND POWER, CITY OF LOS ANGELES FOR THE PERIOD OF APRIL THROUGH SEPTEMBER

SEASONAL PRECIPITATION IN PERCENT OF AVERAGE TO DATE
OCTOBER 1, 1990 TO APRIL 1, 1991



HYDROLOGIC AREA

NC - North Coast

SF - San Francisco Bay

CC - Central Coast

SC - South Coast

SB - Sacramento

SJ - San Joaquin

TL - Tulare Lake

NL - North Lahontan

SL - South Lahontan

CR - Colorado Desert

CALIFORNIA COOPERATIVE SNOW SURVEYS PROGRAM

FORECASTS OF APRIL-JULY UNIMPAIRED RUNOFF FOR CENTRAL VALLEY STREAMS APRIL 1, 1991

DRAINAGE BASIN AND WATERSHED	April through July Unimpaired Runoff in 1,000 Acre-Feet					
	HISTORICAL			FORECASTS		
	50 Year Average	Maximum of Record	Minimum of Record	April-July Forecast	Percent of Average	80% Prob. Range
SACRAMENTO RIVER BASIN						
Upper Sacramento River						
Sacramento River at Shasta Lake (2)	304	702	39	200	66	
McCloud River at Shasta Lake(2)	430	850	185	340	79	
Pit River at Shasta Lake(2)	1,075	1,796	480	800	74	
Total inflow to Shasta Lake(1)	1,880	3,189	726	1,310	70	1,110-1,950
Sacramento River above Bend Bridge, near Red Bluff	2,569	4,674	943	1,700	66	1,450-2,680
Feather River						
Feather River at Lake Almanor near Pratville (2)	345	675	120	250	72	
North Fork at Pulga (2)	1,080	2,416	243	700	65	
Middle Fork near Clio (3)	86	518	4	40	47	
South Fork at Ponderosa Dam (2)	116	267	13	75	65	
Total inflow to Oroville Reservoir	1,971	4,676	392	1,300	66	1,090-2,000
Yuba River						
North Yuba below Goodyears Bar (2)	298	647	51	200	67	
Inflow to Jackson Mdws and Bowman Reservoirs (2)	115	236	25	80	70	
South Yuba at Langs Crossing (2)	232	481	57	170	73	
Yuba River at Smartville	1,107	2,424	200	740	67	600-1,120
American River						
North Fork at North Fork Dam (2)	274	716	43	155	57	
Middle Fork near Auburn (2)	548	1,406	100	340	62	
Silver Creek below Camino Diversion Dam (2)	178	386	37	110	62	
Total inflow to Folsom Reservoir	1,366	3,074	229	800	59	650-1,280
Sacramento River at Sacramento						
SAN JOAQUIN RIVER BASIN						
Cosumnes River at Michigan Bar	140	363	8	70	50	40-130
Mokelumne River						
North Fork near West Point (4)	437	829	104	300	69	
Total inflow to Pardee Reservoir	490	1,065	102	320	65	255-430
Stanislaus River						
North Fork inflow to McKay's Point Dam	224	503	34	125	56	
Middle Fork below Beardsley Dam (2)	352	702	64	230	65	
Total inflow to Melones Reservoir	753	1,710	116	470	62	370-710
Tuolumne River						
Cherry Creek and Eleanor Creek near Hetch Hetchy (2)	322	727	97	220	68	
Tuolumne River near Hetch Hetchy (2)	618	1,392	153	440	71	
Total inflow to Don Pedro Reservoir	1,254	2,682	301	830	66	700-1,090
Merced River						
Merced River at Pohono Bridge (2)	371	888	80	255	69	
Total inflow to Exchequer Reservoir	654	1,587	123	410	63	335-570
San Joaquin River						
San Joaquin River at Mammoth Pool (2)	1,014	2,279	235	760	75	
Big Creek below Huntington Lake (2)	95	264	11	65	68	
South Fork near Florence Lake (2)	202	511	58	155	77	
Total inflow to Millerton Lake	1,296	3,355	262	900	69	770-1,150
San Joaquin River near Vernalis						
TULARE LAKE BASIN						
Kings River						
North Fork Kings River near Cliff Camp (2)	243	565	50	180	74	
Total inflow to Pine Flat Reservoir	1,266	3,114	273	900	71	760-1,130
Kaweah River at Terminus Reservoir	303	814	61	230	76	190-280
Tule River at Success Reservoir	70	256	2	40	57	30-55
Kern River						
Kern River near Kernville (2)	389	1,203	83	270	69	
Total inflow to Isabella Reservoir	492	1,657	84	320	65	260-410

(1) All 50-year averages are based on data for water years 1936-1985 except:
(2) 45-year average based on years 1936-80. (4) 36-year average based on years 1936-71.
(3) 44-year average based on years 1936-79. (5) See inside back cover for definition of unimpaired runoff and 80 percent probability ranges.

FORECASTS OF WATER YEAR UNIMPAIRED RUNOFF FOR CENTRAL VALLEY STREAMS APRIL 1, 1991

Water Year October through September Unimpaired Runoff in 1,000's Acre-Feet												
HISTORICAL			*	*	* DISTRIBUTION						FORECASTS	
50 Year Average	Maximum of Record	Minimum of Record	October through January	February	March	April	May	June	July	August and September	Water Year Forecast	Percent of Average
859	1,964	165										
1,286	2,353	577										
3,169	5,150	1,484										
6,090	10,796	2,479	790	210	610	520	380	210	200	350	3,270 (3,010-4,080)	54
8,856	17,180	3,294	950	270	980	620	490	350	240	430	4,330 (4,030-5,470)	49
786	1,269	366										
2,446	4,400	666										
219	637	24										
292	562	32										
4,754	9,492	994	260	100	540	570	440	190	100	160	2,360 (2,120-3,110)	50
565	1,056	102										
174	292	30										
357	565	98										
2,460	4,926	369	70	30	325	330	290	100	20	25	1,190 (1,040-1,600)	48
612	1,234	66										
1,066	2,575	144										
314	705	59										
2,837	6,381	349	30	25	330	380	300	100	20	15	1,200 (1,040-1,700)	42
												48
407	1,253	20	1	2	50	35	25	7	3	2	125 (90-190)	31
626	1,009	197										
776	1,800	129	7	3	48	130	145	40	5	2	380 (310-510)	49
483	929	88										
1,198	2,952	155	12	3	80	180	190	80	20	5	570 (465-820)	48
461	1,147	123										
775	1,661	258										
1,951	4,430	383	14	9	167	270	360	160	40	10	1,030 (900-1,290)	53
460	1,020	92										
1,023	2,859	150	10	3	95	130	180	80	20	2	520 (440-700)	51
1,337	2,964	308										
112	298	14										
248	653	71										
1,861	4,642	362	32	11	117	240	360	220	80	30	1,090 (950-1,350)	59
												53
282	607	58										
1,745	4,294	383	40	10	125	230	360	240	70	25	1,100 (950-1,340)	63
468	1,402	92	7	3	42	70	110	30	20	3	285 (245-340)	61
159	615	16	3	1	21	20	16	3	1	0	65 (55-80)	41
575	1,577	163										
749	2,309	175	32	10	48	80	120	90	30	25	435 (370-540)	58

* Unimpaired runoff to date Monthly distributions of runoff forecasts are estimated based on comparisons with previous water years

FORECASTS OF APRIL-JULY UNIMPAIRED RUNOFF
FOR SELECTED CALIFORNIA STREAMS
APRIL 1, 1991

DRAINAGE BASIN AND WATERSHED	April through July Unimpaired Runoff in 1,000 Acre-Feet				
	HISTORICAL			FORECASTS	
	50 Year Average(1)	Maximum of Record	Minimum of Record	April-July Forecast	Percent of Average
NORTH COAST AREA					
Trinity River at Lewiston	676	1,593	80	450	67
Scott River at Ft. Jones	200	*	*	120	60
Upper Klamath Lake(1)(2)(5)	521	1,151	177	280	54
LAHONTAN AREA					
Truckee River, Lake Tahoe to Farad accretion	278	713	58	140	50
Lake Tahoe Rise in feet (assuming gates closed)	1.5	3.75	0.23	0.7	47
East Carson River near Gardnerville	195	407	43	120	62
West Carson River at Woodfords	55	131	12	32	58
East Walker River near Bridgeport	68	209	7	35	51
West Walker River near Coleville	154	330	35	95	62
Owens River(1)(3)	310	728	131	238	77

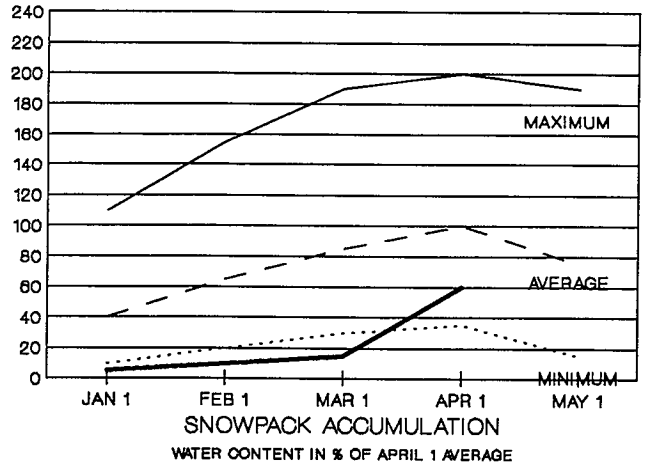
(1)Forecast period of April-September

(2)Forecast by U.S. Soil Conservation Service, Portland, Or.

(3)Forecast by Dept. of Water and Power, City of Los Angeles

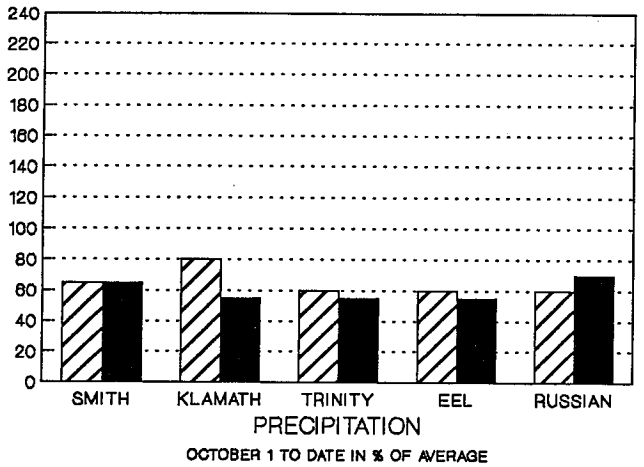
(4)Inside back cover for definition of unimpaired runoff.

(5)Average period of 25 years

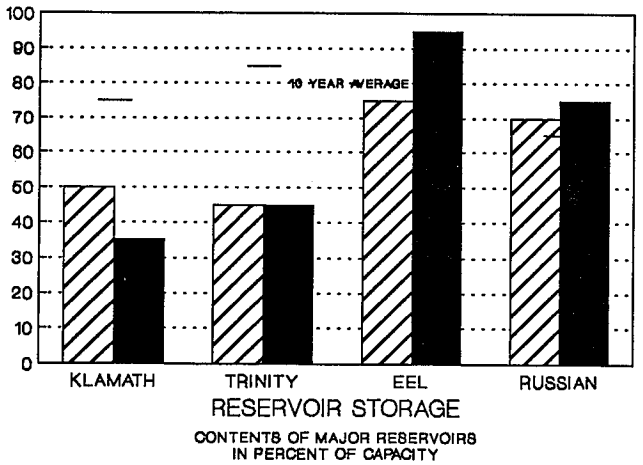


NORTH COAST AREA

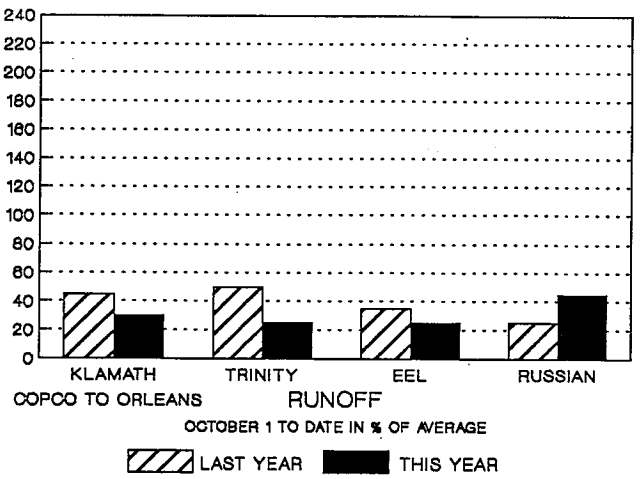
SNOWPACK - First of the month measurements made at 18 snow courses indicate an area wide snow water equivalent of 17.6 inches. This is 60 percent of the seasonal (April 1) average. Last year at this time the pack was holding 11.2 inches of water.



PRECIPITATION - Seasonal precipitation (October 1 through the end of last month) on this area was 60 percent of normal. Precipitation last month was about 200 percent of the monthly average. Seasonal precipitation at this time last year stood at 65 percent of normal.

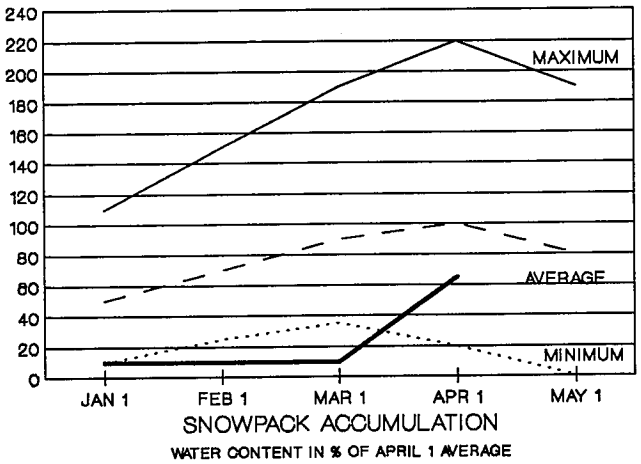


RESERVOIR STORAGE - First of the month storage in 7 reservoirs was 1.5 million acre-feet which is about 60 percent of average. About 45 percent of available capacity was being used. Storage in these reservoirs at this time last year was 75 percent of average.



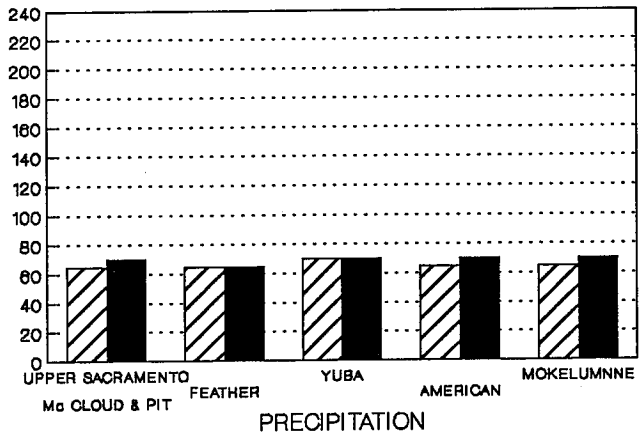
RUNOFF - Seasonal runoff of streams draining the area totaled 2.8 million acre-feet which is about 30 percent of average for this period. Last year, runoff for the same period was about 40 percent of average.

SACRAMENTO BASIN



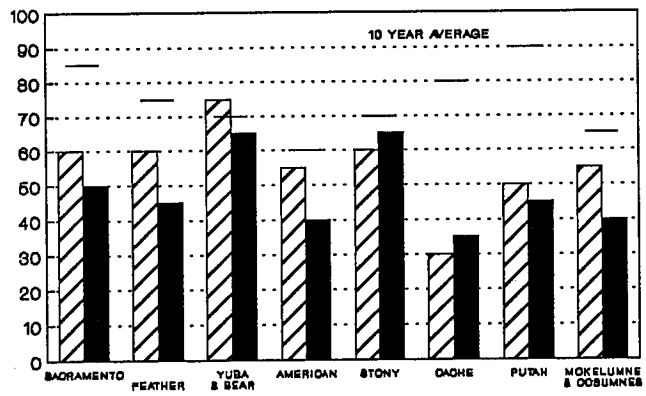
SNOWPACK ACCUMULATION
WATER CONTENT IN % OF APRIL 1 AVERAGE

SNOWPACK - First of the month measurements made at 85 snow course indicate a basin wide snow water equivalent of 19.6 inches. This is 65 percent of the average for April 1. Last year at this time, the pack was holding 12.3 inches of water.



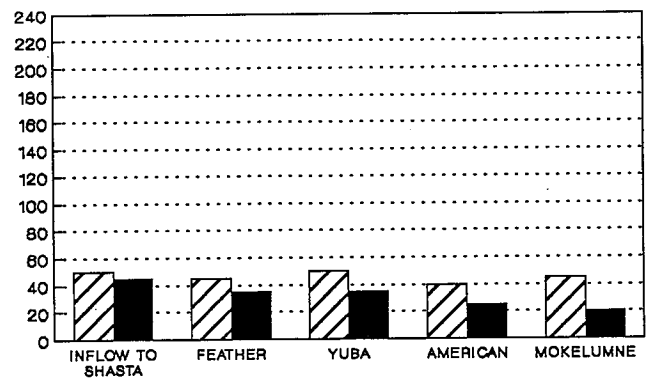
PRECIPITATION
OCTOBER 1 TO DATE IN % OF AVERAGE

PRECIPITATION - Seasonal precipitation (October 1 through the end of last month) on the Sacramento Basin was 70 percent of normal. Precipitation last month was about 290 percent of the monthly average. Seasonal precipitation at this time last year stood at 65 percent of normal.



RESERVOIR STORAGE
CONTENTS OF MAJOR RESERVOIRS IN PERCENT OF CAPACITY

RESERVOIR STORAGE - First of the month storage in 43 reservoirs was 7.6 million acre-feet which is about 60 percent of average. About 50 percent of available capacity was being used. Storage in these reservoirs was about 75 percent of average at this time last year.

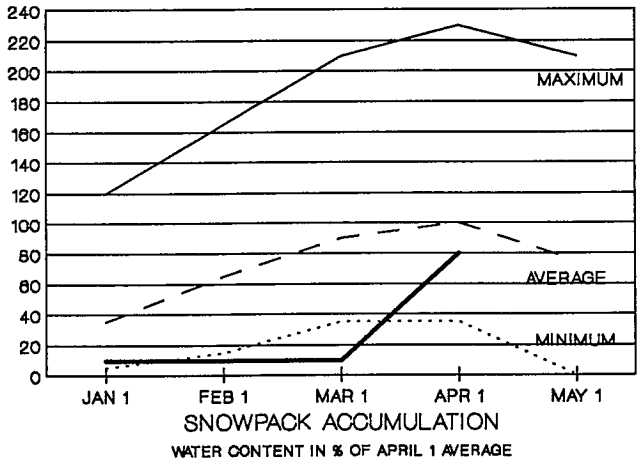


RUNOFF
OCTOBER 1 TO DATE IN % OF AVERAGE

LAST YEAR THIS YEAR

RUNOFF - Seasonal runoff from streams draining into the basin totaled 3.9 million acre-feet which is 35 percent of average for this period. Last year runoff for the same period was 45 percent of average.

The Sacramento River Index for the year is forecast at 9.1 million acre-feet assuming median meteorological conditions for the remainder of the year. This classifies the year as "critical" in the Sacramento-San Joaquin Delta according to the State Water Resources Control Board's Decision 1485.

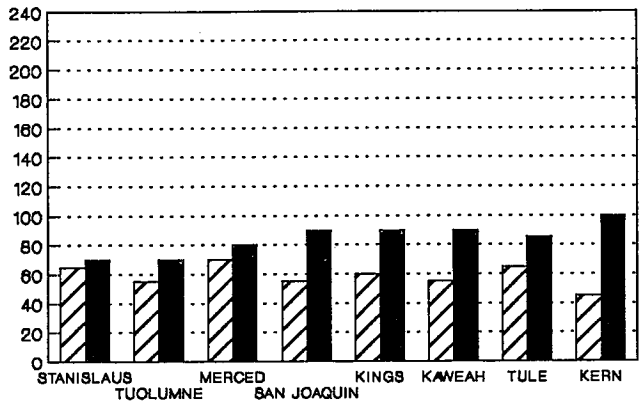


SNOWPACK ACCUMULATION
WATER CONTENT IN % OF APRIL 1 AVERAGE

SAN JOAQUIN AND TULARE LAKE BASINS

SNOWPACK - First of the month measurements made at 73 San Joaquin Basin snow courses indicate a basin wide snow water equivalent of 24.7 inches which is 80 percent of the seasonal (April 1) average. Last year at this time, the pack was holding 15.8 inches of water.

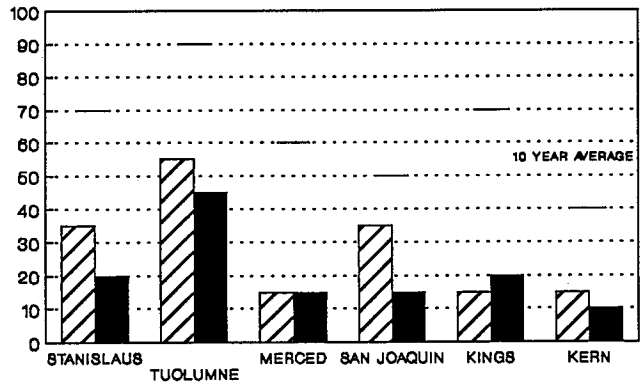
At the same time, 45 Tulare Lake Basin snow courses indicated a basin wide snow water equivalent of 19.8 inches which is 90 percent of the seasonal average. Last year at this time, the Basin was holding 9.0 inches of water.



PRECIPITATION
OCTOBER 1 TO DATE IN % OF AVERAGE

PRECIPITATION - Seasonal precipitation (October 1 through the end of last month) on the San Joaquin Basin was about 75 percent of normal. Precipitation last month was about 310 percent of the monthly average. Seasonal precipitation at this time last year stood at 60 percent of normal.

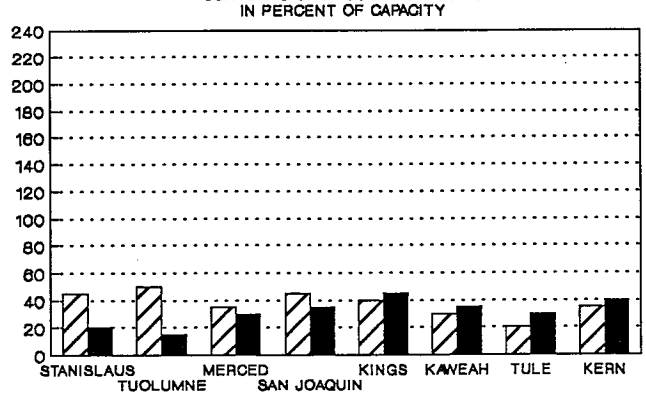
Seasonal precipitation on the Tulare Lake Basin was 95 percent of normal. Precipitation last month was 390 percent of the monthly average. Seasonal precipitation at this time last year stood at 55 percent of normal.



RESERVOIR STORAGE
CONTENTS OF MAJOR RESERVOIRS
IN PERCENT OF CAPACITY

RESERVOIR STORAGE - First of the month storage in 33 San Joaquin Basin reservoirs was 4.1 million acre-feet which is 55 percent of average. About 35 percent of available capacity was being used. Storage in these reservoirs at this time last year was 75 percent of average.

First of the month storage in 6 Tulare Lake Basin reservoirs was 385 thousand acre-feet which is 45 percent of average. About 20 percent of available capacity was being used. Storage in these reservoirs at this time last year was 40 percent of average.

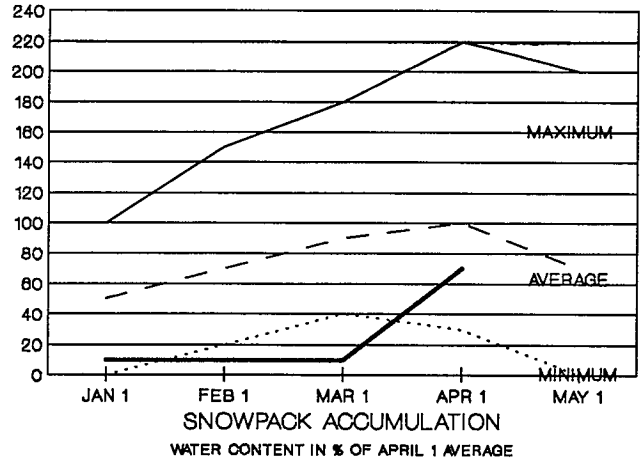


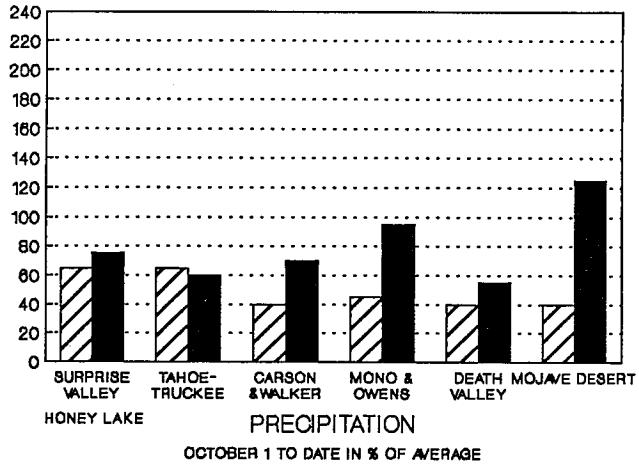
RUNOFF
OCTOBER 1 TO DATE IN % OF AVERAGE

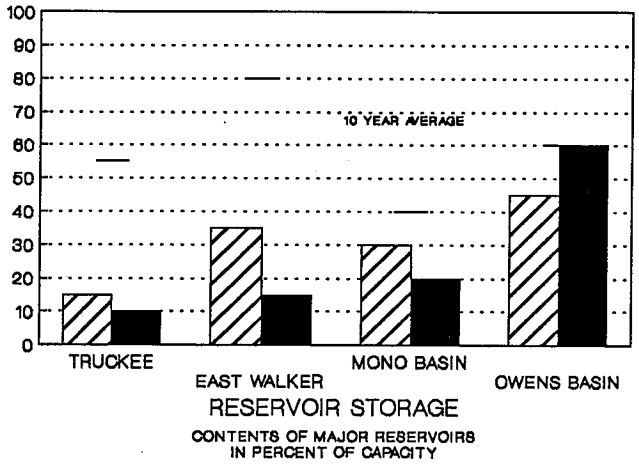
LAST YEAR THIS YEAR

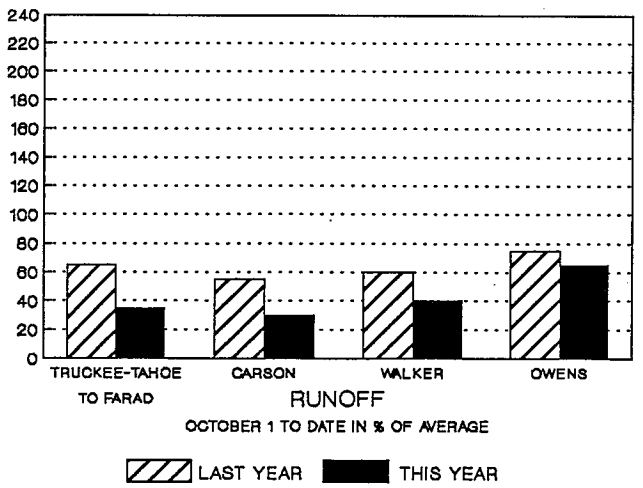
RUNOFF - Seasonal runoff of streams draining into the San Joaquin Basin totaled 670 thousand acre-feet which is 25 percent of average for this period. Last year, runoff for this same period was 40 percent of average.

Seasonal runoff of streams draining into the Tulare Lake Basin totaled 346 thousand acre-feet which is 40 percent of average for this period. Last year, runoff for this same period was 35 percent of average.









NORTH AND SOUTH LAHONTAN AREA

SNOWPACK - First of the month measurements made at 31 North Lahontan snow courses indicate an area wide snow water equivalent of 15.7 inches which is 70 percent of the seasonal (April 1) average. Last year at this time, the pack was holding 12.5 inches of water.

At the same time, 22 South Lahontan courses indicated an area wide snow water equivalent of 19.9 inches which is 80 percent of the seasonal average. Last year at this time, the basin was holding 11.5 inches of water.

PRECIPITATION - Seasonal precipitation (October 1 through the end of last month) over the North Lahontan area averaged 70 percent of normal. Precipitation last month was 355 percent of the monthly average. Seasonal precipitation at this time last year stood at 50 percent of normal.

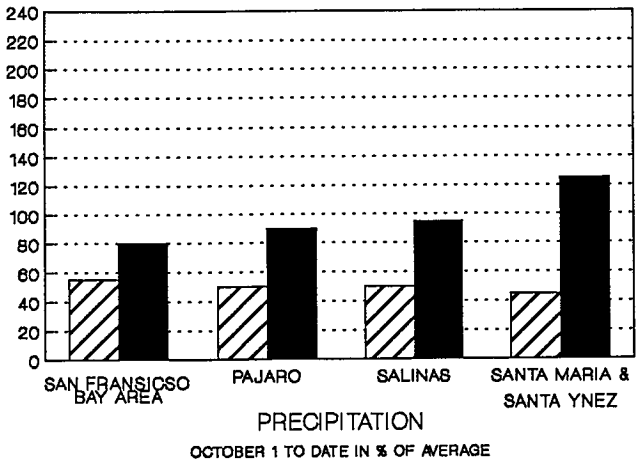
Seasonal precipitation over the South Lahontan area averaged about 95 percent of normal. Last month's precipitation was 375 percent of the monthly average. Seasonal precipitation at this time last year stood at 45 percent of normal.

RESERVOIR STORAGE - First of the month storage in 5 North Lahontan reservoirs was 113 thousand acre-feet which is about 20 percent of average. About 10 percent of available capacity was being used. Lake Tahoe is still about .7 feet below its natural rim. Storage in these reservoirs at this time last year was 30 percent of average.

First of the month storage in 8 South Lahontan reservoirs was 234 thousand acre-feet which is 85 percent of average. About 60 percent of available capacity was being used. Storage in these reservoirs at this time last year was 75 percent of average.

RUNOFF - Seasonal runoff of streams drainng the North Lahontan area totaled 99 thousand acre-feet which is 35 percent of average for this period. Last year, runoff for this same period was 65 percent of average.

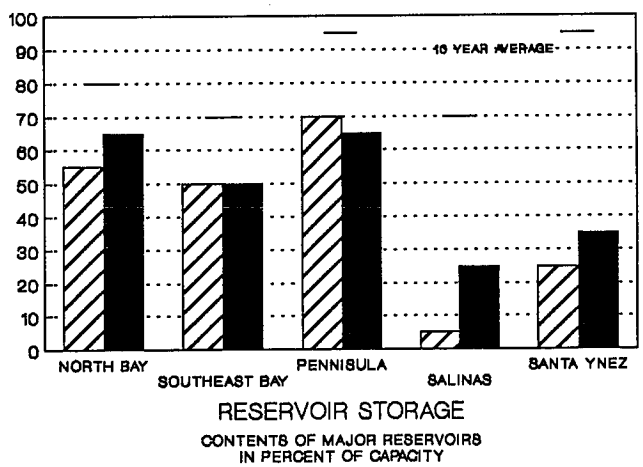
Seasonal runoff of the Owens River in the South Lahontan area totaled 40 thousand acre-feet which is about 60 percent of average for this period. Last year, runoff for this same period was 85 percent of average.



SAN FRANCISCO AND CENTRAL COAST AREAS

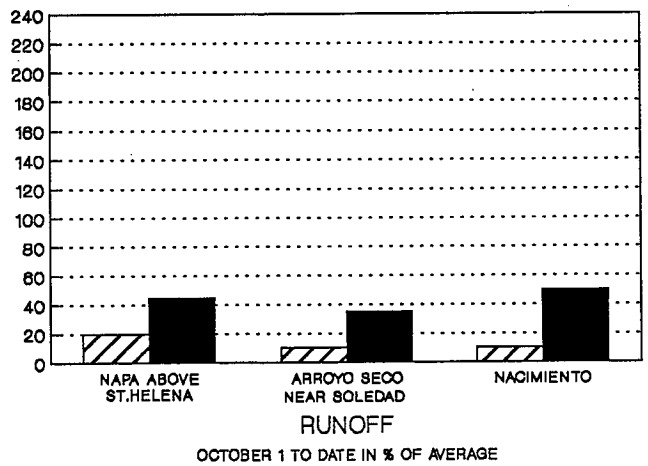
PRECIPITATION - Seasonal precipitation (October 1 through the end of last month) on the San Francisco Bay area was 80 percent of normal. Precipitation last month was 330 percent of the monthly average. Seasonal precipitation at this time last year stood at about 55 percent of normal.

Seasonal precipitation on the Central Coast area averaged 105 percent of normal. Precipitation last month was 420 percent of the monthly average. Seasonal precipitation at this time last year stood at about 50 percent of normal.



RESERVOIR STORAGE - First of the month storage in 18 major Bay area reservoirs was 382 thousand acre-feet which is nearly 75 percent of average. About 55 percent of available capacity was being used. Storage in these reservoirs at this time last year was almost 70 percent of average.

First of the month storage in 6 major Central Coast reservoirs was 265 thousand acre-feet which is approximately 40 percent of average. About 30 percent of available capacity was being used. Storage in these reservoirs at this time last year was only about 20 percent of average.



RUNOFF - Seasonal runoff of the Napa River in the San Francisco Bay area totaled 31 thousand acre-feet which is about 45 percent of average for this period. Last year, runoff for this same period was about 20 percent of average.

Seasonal runoff of selected Central Coast streams totaled 134 thousand acre-feet which is 45 percent of average for this period. Last year, runoff for this same period was 10 percent of average.

LAST YEAR THIS YEAR

SOUTH COAST AND COLORADO RIVER AREAS

PRECIPITATION - Seasonal precipitation (October 1 through the end of last month) on the South Coast was 105 percent of normal. Precipitation last month was 370 percent of the monthly average. Seasonal precipitation at this time last year stood at 45 percent of normal.

Seasonal precipitation on the Colorado Desert area was 105 percent of normal. Precipitation last month was 290 percent of the monthly average. Seasonal precipitation at this time last year was 25 percent of average.

RESERVOIR STORAGE - First of the month storage in 29 South Coast reservoirs was 1.3 million acre-feet which is 100 percent of average. About 68 percent of available capacity was being used. Storage in these reservoirs at this time last year was 100 percent of average.

First of the month combined storage in Lakes Powell, Mead, Mohave and Havasu was 37.6 million acre-feet which is about 100 percent of average. About 70 percent of available capacity was being used.

RUNOFF - Seasonal runoff of selected South Coast streams totaled 25 thousand acre-feet which is 50 percent of average. Last year, runoff for the same period was 20 percent of average.

UPPER COLORADO

The April 1 snowpack in the Upper Colorado River Basin, according to U.S. Soil Conservation Service Snotel reports, was 85 percent of average and ranges from 102 percent in the Animas Basin to 71 percent in the Green River Basin. The April through July inflow to Lake Powell is forecast to be 4.6 million acre-feet which is 57 percent of normal.

CENTRAL VALLEY PROJECT

CVP storage rose from 3.8 to 5.0 million acre-feet during March. Total CVP storage for April is 58 percent of normal. One year ago, it was 6.4 million acre-feet. Water year runoff into CVP reservoirs now ranges from 41 percent of normal at Folsom to 62 percent at Friant Dam. Bureau of Reclamation April through July runoff forecasts range from 51 percent at Folsom to 71 percent at Friant.

Record March precipitation in the Upper San Joaquin permitted as increase in deliveries to 53 percent of normal (100% Class 1, 0% Class II). As of April 1, all previously announced CVP water contractor supplies are still in effect:75 percent to water rights, 25 percent to agricultural, 25-50 percent to Municipal and Industrial.

STATE WATER PROJECT

On April 1, conservation storage (Oroville plus the State share of San Luis) was 1660 thousand acre-feet(TAF), or 36 percent full. The SWP also has 250 TAF in groundwater conservation storage.

On April 5, 1991 the Department of Water Resources increased delivery approvals from 10 percent to 20 percent of municipal and industrial requests. (In early February, agricultural customers were notified that there would be no further agricultural deliveries from the SWP in 1991.) The Department is developing a water bank to meet critical agricultural and urban needs throughout the State.

MAJOR WATER DISTRIBUTION PROJECTS

RESERVOIR STORAGE

(AVERAGES BASED ON PERIOD RECORD)

RESERVOIR	CAPACITY 1,000 AF	AVERAGE STORAGE 1,000 AF	STORAGE AS OF MARCH 31 1990 1,000 AF	1991 1,000 AF	PERCENT AVERAGE
STATE WATER PROJECT					
Oroville	3,540	2,849	2,091	1,320	46
San Luis SWP	1,060	972	1,076	339	35
Lake Del Valle	77	37	36	40	109
Silverwood	73	67	68	72	107
Pyramid Lake	171	159	159	168	106
Castaic Lake	324	279	314	176	63
Perris Reservoir	132	116	126	125	108
CENTRAL VALLEY PROJECT					
Clair Engle Lake	2,450	2,026	1,431	1,036	51
Shasta Lake	4,552	3,819	2,709	2,020	53
Whiskeytown	241	213	206	206	97
Folsom	1,010	637	503	422	66
New Melones	2,420	1,727	770	423	24
Millerton Lake	521	308	250	289	94
San Luis CVP	980	827	774	862	104
COLORADO RIVER PROJECT					
Lake Mead	26,159	19,490	21,477	20,050	103
Lake Powell	25,002	14,591	17,992	15,971	109
Lake Mohave	1,810	1,639	1,608	1,759	107
Lake Havasu	619	547	582	608	111
EAST BAY MUNICIPAL UTILITY DISTRICT					
Pardee	210	178	192	150	84
Camanche	431	272	200	140	51
East Bay (4 reservoirs)	151	132	130	135	102
CITY & COUNTY OF SAN FRANCISCO					
Hetch Hetchy	360	124	96	50	40
Cherry Lake	268	108	126	74	68
Lake Eleanor	26	11	3	3	26
South Bay (4 reservoirs)	225	179	121	106	59
CITY OF LOS ANGELES(DWP)					
Crowley Lake(Long Valley)	183	125	103	110	88
Grant Lake	48	21	11	12	57
Other Aqueduct Storage(6 reservoirs)	95	70	71	71	101

DEPARTMENT OF WATER RESOURCES - CALIFORNIA DATA EXCHANGE CENTER
TELEMETERED SNOW WATER EQUIVALENTS - APRIL 1, 1991

BASIN NAME / STATION NAME	AGENCY	ELEV FEET	APR 1 AVG	TODAY	INCHES OF WATER EQUIVALENT PERCENT OF APR 1	24 HRS AGO	1 WEEK AGO
TRINITY RIVER							
PETERSON FLAT	USBR	7150	—	13.9	—	14.0	12.0
RED ROCK MOUNTAIN	USBR	6700	39.6	29.7	75%	29.7	29.1
BONANZA KING	USBR	6450	40.5	22.1	54%	22.1	19.9
SHIMMY LAKE	USBR	6200	40.3	31.4	78%	31.4	30.7
MIDDLE BOULDER #3	USBR	6200	28.3	20.9	74%	21.6	22.2
HIGHLAND LAKES	USBR	6030	29.9	18.3	61%	18.6	17.5
SCOTTS MOUNTAIN	USBR	5900	—	13.4	—	13.6	12.4
MUMBO BASIN	USBR	5700	22.4	12.1	54%	12.4	11.2
BIG FLAT	USBR	5100	—	10.4	—	10.7	9.6
SACRAMENTO RIVER							
CEDAR PASS	SCS	7100	18.1	12.5	69%	12.7	12.3
BLACKS MOUNTAIN	DWR	7100	—	11.2	—	11.4	11.4
SAND FLAT	USBR	6750	42.4	20.3	48%	20.3	18.1
MEDICINE LAKE	USBR	6700	—	16.8	—	16.8	15.5
ADIN MOUNTAIN	SCS	6350	13.6	5.6	41%	5.9	5.8
SNOW MOUNTAIN	USBR	5950	27.0	19.1	71%	19.3	16.7
SLATE CREEK	USBR	5600	29.0	16.6	57%	16.6	14.0
STOUTS MEADOW	USBR	5400	36.0	21.0	58%	20.6	17.6
FEATHER RIVER							
KETTLEROCK	DWR	7300	25.5	15.0	59%	15.1	—
GRIZZLY	DWR	6900	29.7	16.1	54%	16.6	15.1
PILOT PEAK	DWR	6800	52.6	23.4	44%	22.4	22.4
GOLD LAKE	DWR	6750	36.5	28.8	79%	28.9	27.4
HUMBUG	DWR	6500	28.0	21.1	75%	21.1	17.8
RATTLESNAKE	DWR	6100	14.0	12.2	87%	12.5	11.6
BUCKS LAKE	DWR	5750	44.7	43.8	98%	43.9	38.6
FOUR TREES	DWR	5150	20.0	22.4	112%	23.4	20.5
YUBA & AMERICAN RIV							
LAKE LOIS	DWR	8800	—	29.0	—	28.3	25.1
SCHNEIDERS	SMUD	8750	34.5	—	—	—	26.8
CAPLES LAKE COURSE	USBR	7800	30.9	17.6	57%	17.5	14.8
ALPHA	SMUD	7600	35.9	—	—	—	24.4
FORNI RIDGE	USBR	7600	37.0	18.3	49%	18.3	15.9
SILVER LAKE	USBR	7100	22.7	15.8	70%	16.0	14.8
CENT SIERRA SNOW LAB	USFS	6950	33.6	20.5	61%	20.8	19.6
HUYSINK	USBR	6600	42.6	19.7	46%	19.7	17.3
VAN VLECK	SMUD	6700	35.9	—	—	—	25.4
ROBBS SADDLE	SMUD	5900	21.4	—	—	—	18.7
GREEK STORE	USBR	5600	21.0	25.0	119%	25.0	21.5
BLUE CANYON	USBR	5280	9.0	—	—	—	9.3
ROBBS POWERHOUSE	SMUD	5150	5.2	—	—	—	8.2
MOKEL. & STANIS. RIV							
DEADMAN CREEK	USBR	9250	37.2	19.8	53%	19.7	17.2
HIGHLAND MEADOW	USBR	8800	47.9	22.7	47%	22.4	20.6
GIANELLI MEADOW	USBR	8350	55.5	29.3	53%	29.9	27.9
LOWER RELIEF VALLEY	DWR	8100	41.2	27.4	67%	27.4	25.4
BLUE LAKES	SCS	8000	33.1	20.9	63%	20.9	18.9
MUD LAKE	SMUD	7900	44.9	—	—	—	35.7
STANISLAUS MEADOW	USBR	7750	47.5	26.8	56%	26.5	22.9
BLOODS CREEK	USBR	7200	35.5	25.0	70%	25.0	23.0
BLACK SPRINGS	USBR	6500	32.0	25.2	79%	25.0	22.6
TUOLUMNE & MERCED R.							
DANA MEADOWS	DWR	9800	27.7	20.6	74%	20.6	19.2
SLIDE CANYON	DWR	9200	—	28.5	—	28.6	27.9
SNOW FLAT	DWR	8700	44.1	30.7	70%	30.1	30.1
TUOLUMNE MEADOWS	DWR	8600	22.6	13.1	58%	13.1	10.8
HORSE MEADOW	DWR	8400	48.6	26.6	55%	26.8	24.2
OSTRANDER LAKE	DWR	8200	34.8	32.0	92%	31.4	28.1
PARADISE	DWR	7650	—	28.4	—	27.8	26.5
GIN FLAT	DWR	7050	34.2	26.9	79%	26.9	23.3
LOWER KIBBIE	DWR	6600	27.4	18.6	68%	18.4	16.4
SAN JOAQUIN RIVER							
VOLCANIC KNOB	USBR	10100	30.1	22.9	76%	22.9	20.3
AGNEW PASS	USBR	9450	32.3	21.6	67%	21.6	18.9
KAISER POINT	USBR	9200	37.8	29.5	78%	29.5	26.8
GREEN MOUNTAIN	USBR	7900	30.8	22.2	72%	22.2	19.3
TAMARACK SUMMIT	USBR	7600	30.5	24.8	81%	24.8	21.9

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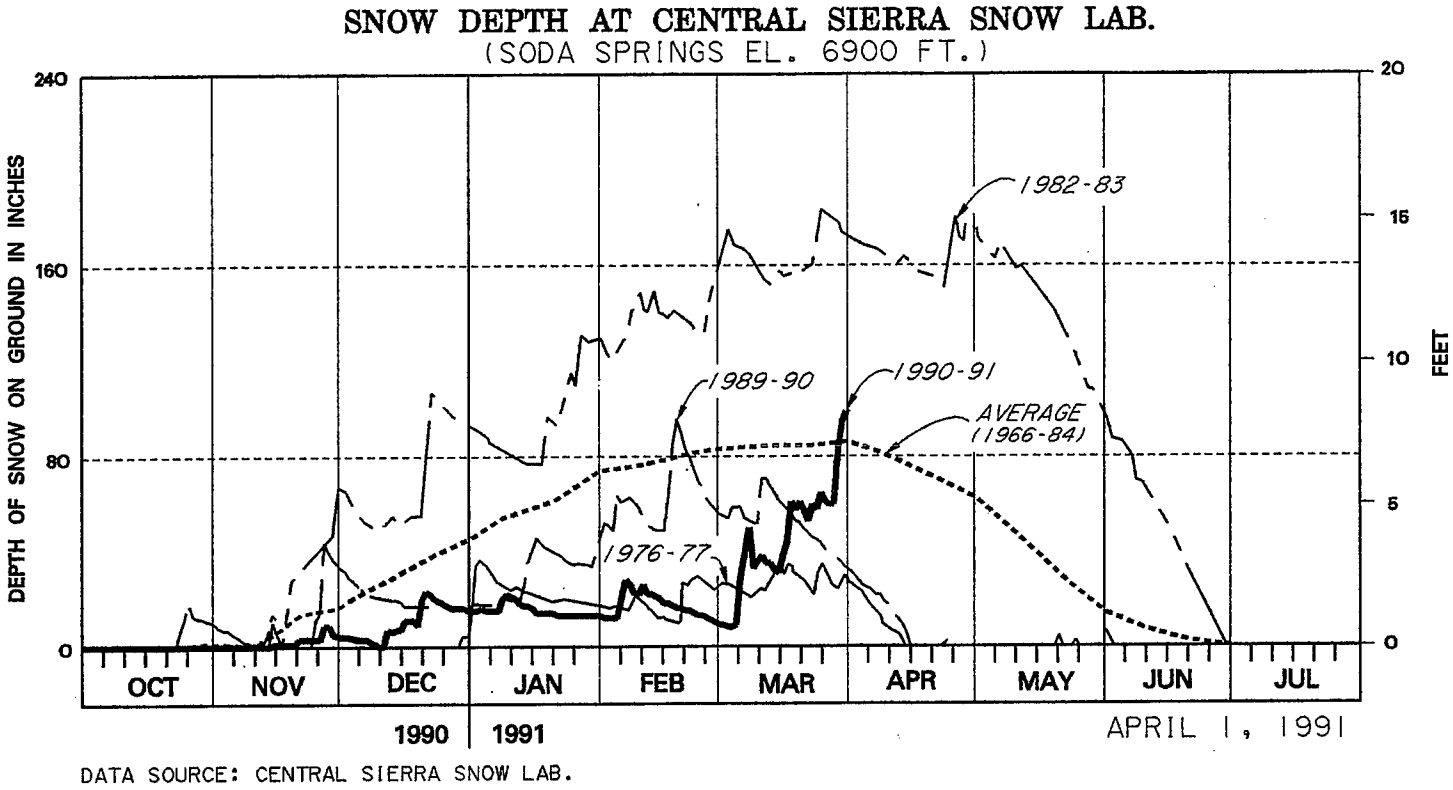
CHILKOOT MEADOW	USBR	7150	38.0	32.3	85%	32.3	27.8
HUNTINGTON LAKE	USBR	7000	20.1	23.0	114%	23.0	20.9
GRAVEYARD MEADOW	USBR	6900	18.8	16.1	86%	16.1	13.8
POISON RIDGE	USBR	6900	28.9	27.2	94%	27.2	22.2
KINGS RIVER							
BISHOP PASS	DWR	11200	—	18.3	—	18.3	16.3
CHARLOTTE LAKE	DWR	10400	—	18.8	—	18.8	17.4
STATE LAKES	USCE	10400	29.0	22.5	78%	22.3	20.0
MITCHELL MEADOW	USCE	10375	32.9	27.4	83%	27.3	24.6
BLACKCAP BASIN	USBR	10300	34.3	17.0	50%	17.0	14.4
UPPER BURNT CORRAL	DWR	9700	34.6	29.4	85%	29.4	26.8
WEST WOODCHUCK MDW	USCE	9100	32.8	27.5	84%	27.5	23.2
BIG MEADOWS	DWR	7600	25.9	20.5	79%	20.8	17.9
KAWEAH & TULE RIVERS							
QUAKING ASPEN	DWR	7200	21.0	19.9	95%	20.2	17.8
GIANT FOREST	USCE	6400	10.0	—	—	—	—
KERN RIVER							
UPPER TYNDALL CREEK	USCE	11500	27.7	15.9	57%	15.7	14.2
CRABTREE	DWR	10700	19.8	13.1	66%	13.0	11.6
CHAGOOPA PLATEAU	DWR	10300	21.8	19.6	90%	19.0	19.0
PASCOES	USCE	9150	24.9	27.2	109%	27.3	28.0
TUNNEL	DWR	8950	15.6	13.2	85%	13.2	12.0
WET MEADOW	USCE	8900	30.3	23.2	77%	23.4	21.5
CASA VIEJA MDW	DWR	8400	20.9	18.9	91%	18.9	17.0
BEACH MEADOW	DWR	7650	11.0	9.1	83%	9.0	7.4
SURPRISE VALLEY AREA							
DISMAL SWAMP	SCS	7050	29.2	20.7	71%	21.0	21.2
TRUCKEE RIVER							
MOUNT ROSE SKI AREA	SCS	8850	38.5	23.7	62%	23.7	22.2
INDEPENDENCE LAKE	SCS	8450	41.4	26.8	65%	—	—
BIG MEADOWS	SCS	8700	25.7	13.0	51%	13.1	12.0
INDEPENDENCE CAMP	SCS	6500	21.8	8.1	37%	8.3	7.6
INDEPENDENCE CREEK	SCS	6500	12.7	6.0	47%	6.3	7.4
LAKE TAHOE BASIN							
HEAVENLY VALLEY	SCS	8800	28.1	17.1	61%	17.1	14.5
HAGANS MEADOW	SCS	8000	16.5	10.9	66%	11.2	8.5
MARLETTE LAKE	SCS	8000	21.1	14.6	69%	14.6	13.0
ECHO PEAK	SCS	7800	39.5	—	—	—	—
RUBICON NO. 2	SCS	7500	29.1	21.4	74%	21.1	18.7
WARD CREEK NO. 3	SCS	6750	39.4	21.5	55%	—	19.1
FALLEN LEAF LAKE	SCS	6300	7.0	4.8	69%	4.9	4.4
CARSON RIVER							
EBBETTS PASS	SCS	8700	38.8	22.5	58%	22.6	21.0
POISON FLAT	SCS	7900	16.2	12.8	79%	12.9	11.0
WALKER RIVER							
VIRGINIA LAKES RIDGE	SCS	9200	20.3	13.4	66%	13.4	11.3
LOBDELL LAKE	SCS	9200	17.3	12.2	71%	12.3	11.0
SONORA PASS BRIDGE	SCS	8750	26.0	16.1	62%	16.1	14.5
LEAVITT MEADOWS	SCS	7200	8.0	7.8	98%	7.8	6.6
OWENS RIVER/MONO LK.							
GEM PASS	LADWP	10750	31.7	27.4	87%	26.8	24.8
SAWMILL MEADOW	DWR	10300	19.4	15.0	77%	15.0	13.7
COTTONWOOD LAKES	LADWP	10200	11.6	12.9	112%	12.9	11.5
BIG PINE #3	LADWP	9800	17.9	12.4	69%	12.4	11.1
SOUTH LAKE	LADWP	9600	16.0	13.1	82%	13.1	11.6
MAMMOTH PASS (RP)	USBR	9500	42.4	29.5	70%	29.5	27.0
ROCK CREEK	LADWP	8200	—	11.3	—	11.3	9.6

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
LAHONTAN	50	70	90	100	70



❄❄❄❄ SNOWLINES ❄❄❄❄

Sacramento River Index - Since much of California's runoff is produced in the Sacramento Basin, the Sacramento River Index (SRI) is an important indicator of the adequacy of our water supply. The SRI is the sum of the yearly discharges of the Sacramento River at Bend Bridge, the Feather River inflow to Oroville Reservoir, the Yuba River at Smartville and the American river inflow to Folsom Reservoir. The 50 year (1936-85) average SRI is 18.9 million acre-feet(MAF). The State Water Resources Control Board's Decision 1485, which is used to guide operations in the Sacramento-San Joaquin Delta, classifies the year according to these criteria.

WET	More than 19.6 MAF
ABOVE NORMAL	Between 15.7 and 19.6 MAF
BELOW NORMAL	Between 12.5 and 15.7 MAF
DRY	Between 10.2 and 12.5 MAF
CRITICAL	Below 10.2 MAF

The category thresholds shift upward for fish and wildlife standards if the preceding year was critical.

The SRI for water year 1989-90 was 9.2 MAF, considerably above the low of 5.1 MAF in 1976-77.

March Anecdotes -❄ In the Lake Tahoe area, 15 feet of snow at Alpine Meadows in March was greatest total of any month in 20 years of records at that location. ❄ The greatest snowfall total for the storm of March 23-26 was 116 inches at Iron Mountain on Highway 88 at 7000 feet elevation in the Cosumnes River basin. ❄ Kirkwood received 44 inches of snow in a 24 hour period ending the morning of Monday, 25 March. ❄

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 1941-1990 (50 years, except for data sites established after 1941.)

PRECIPITATION- Averages are based on the period 1931-1980 (50 years, except for data sites established after 1931.)

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 50 year period (1936-1985). For more details, contact California Cooperative Snow Surveys, P.O. Box 942836, Sacramento, CA 94236-0001, (916) 445-2196.

On the Front Cover
DWR crews prepare a telemetered snow sensor for the forth coming winter

Photo by Dave Hart

FIRST CLASS