California Cooperative
Snow Surveys
Bulletin 120-90

State of California
The Resources Agency

Department of
Water Resources

Water Conditions in California

Report 2 — March 1, 1990

Gordon K. Van Vleck
Secretary for Resources
The Resources Agency

George Deukmejian
Governor
State of California

David N. Kennedy
Director
Department of Water Resources

STATE OF CALIFORNIA
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The Resources Agency
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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

Public Utilities

Pacific Gas and Electric Company
Southern California Edison 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

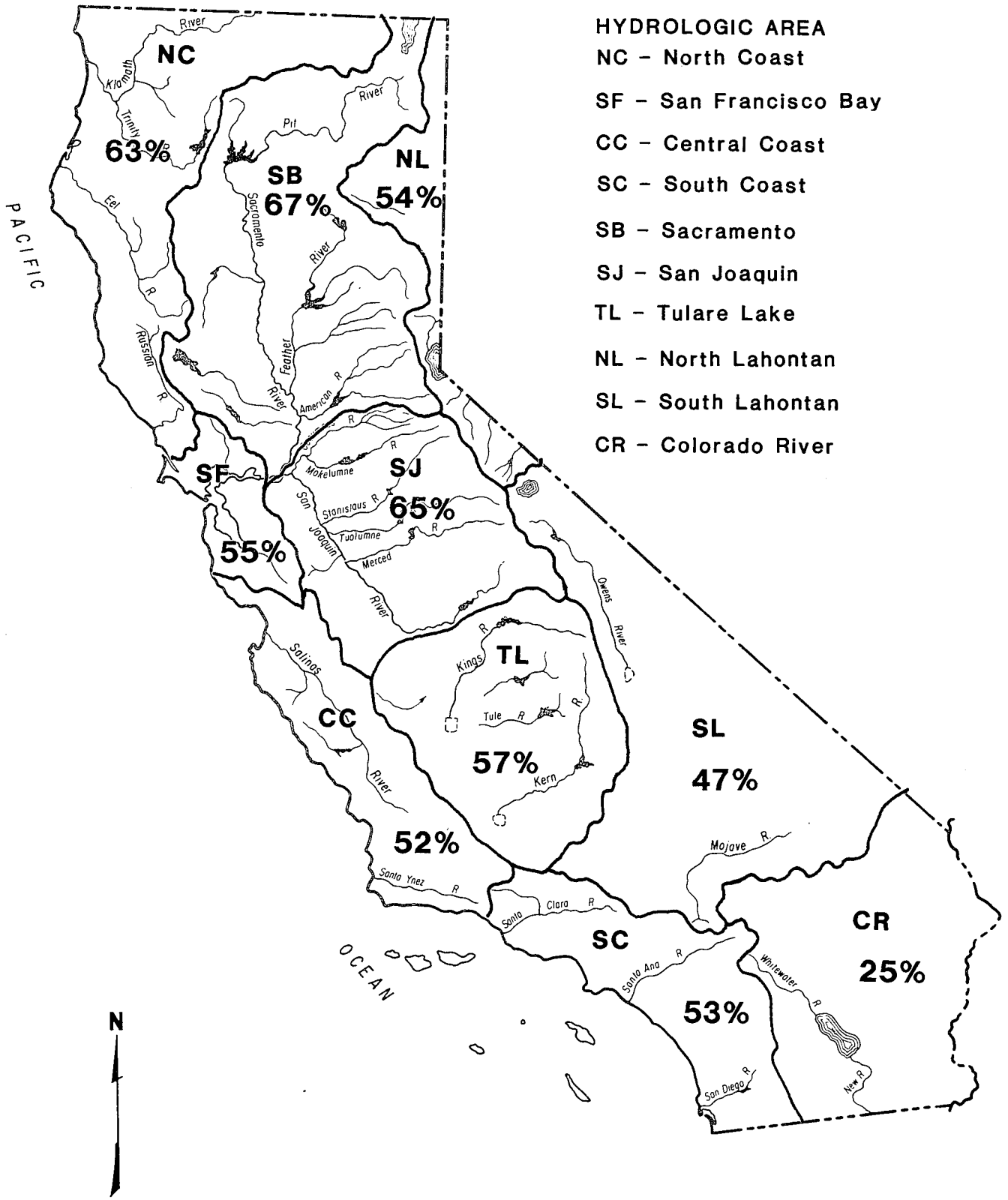
U.S. Department of Agriculture
  Forest Service(14 National Forests)
  Pacific Southwest Forest and Range
  Experiment Station
  Soil Conservation Service
U.S. Department of Commerce
  National Weather Service
U.S. Department of Interior
  Bureau of Reclamation
  Geological Survey, Water Resources
 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

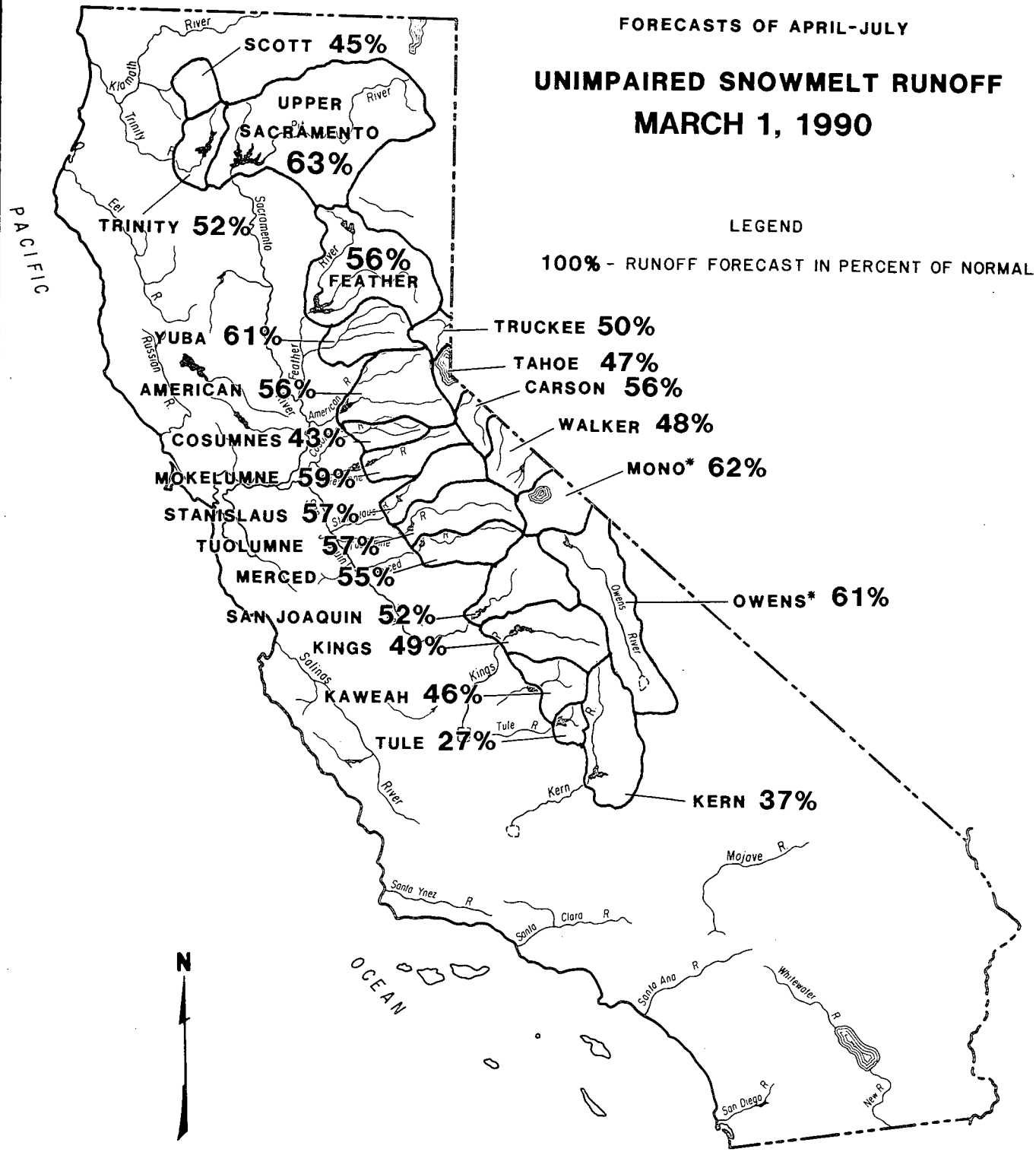
SEASONAL PRECIPITATION IN PERCENT OF AVERAGE TO DATE

OCT. 1, 1989 TO FEBRUARY 28, 1990



FORECASTS OF APRIL-JULY

UNIMPAIRED SNOWMELT RUNOFF
MARCH 1, 1990



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

SUMMARY OF WATER CONDITIONS

March 1, 1990

The water supply outlook is surprisingly similar to that of last year at this time. Californians were disappointed by yet another below normal month. Hopes rose during mid-month when a widespread storm brought significant precipitation, much in the form of snow at unusually low elevations. But the last third of February was dry, and monthly precipitation totals turned out to be around two-thirds of average.

FORECASTS of April through July runoff changed little from those of February. Amounts in the north are expected to be slightly lower. Small improvements, up to 3 percent, are noted on several central Sierra rivers. Water year forecasts, however, are down because of less than average February precipitation and very low February runoff. The Sacramento River Index slipped from "dry" into the "critical" category.

SNOWPACK conditions continue to be much below normal. By March 1, the pack should have about 90 percent of its seasonal accumulation, however it is currently holding only about 55 percent of its April 1 average and about 60 percent of the average March 1 water content. The North Coast snowpack is about half the average while the Sierra snowpack is holding about 60 percent of average.

PRECIPITATION statewide is about 60 percent of average. The wettest region is the Sacramento Basin with two thirds of average and the driest area is the Colorado Desert area.

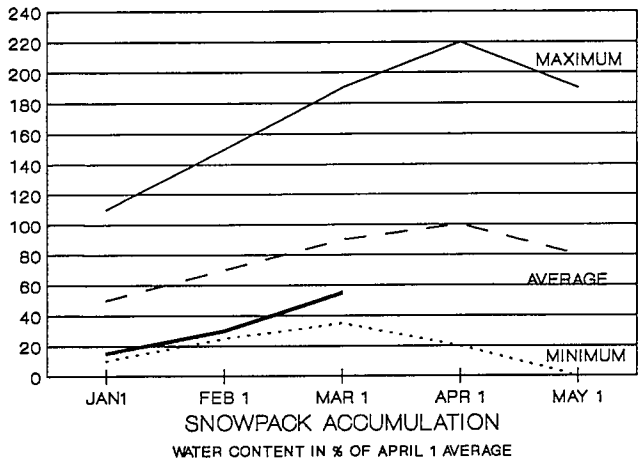
RUNOFF amounts to date are about a third of average for the State as a whole. The North and South Lahontan areas, with slightly over half average runoff, are the wettest regions. Runoff in the coastal regions is particularly low. Seasonal flows in the Central Coast area are only about 10 percent of average. Runoff in the Sacramento Basin stands at 40 percent of normal.

RESERVOIR STORAGE figures continue to remain higher than would be expected. Despite the low seasonal runoff, storage for the State as a whole is about 70 percent of average. Storage amounts, in terms of percent of normal, vary widely from region to region. Storage is highest in South Coast reservoirs, near normal, and lowest in the reservoirs of the Central Coast where it is only about 20 percent of average.

SUMMARY OF WATER CONDITIONS

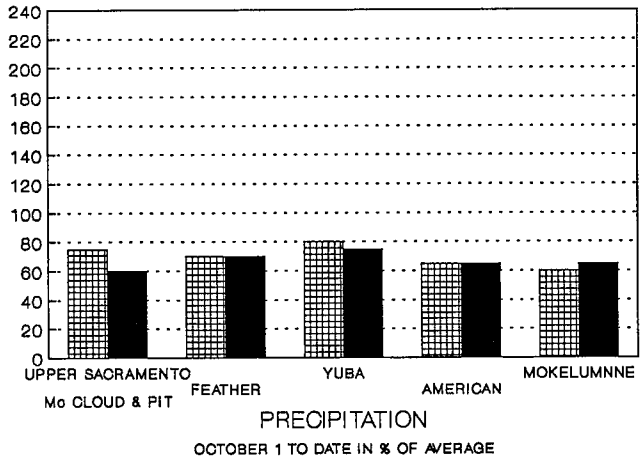
IN PERCENT OF AVERAGE

HYDROGRAPHIC AREA	PRECIPITATION OCTOBER 1 TO DATE	SNOW WATER CONTENT	RESERVOIR STORAGE	RUNOFF OCTOBER 1 TO DATE	RUNOFF APR-JULY FORECAST	WATER YEAR FORECAST
NORTH COAST	65	50	75	35	50	45
SAN FRANCISCO BAY	55	--	70	20	--	--
CENTRAL COAST	50	--	20	10	--	--
SOUTH COAST	55	--	100	15	--	--
SACRAMENTO BASIN	65	60	75	40	60	50
SAN JOAQUIN BASIN	65	60	75	35	55	50
TULARE LAKE BASIN	55	60	35	30	45	45
NORTH LAHONTAN	55	65	30	55	50	55
SOUTH LAHONTAN	45	60	75	60	60	60
COLORADO RIVER	25	--	--	--	--	--
STATEWIDE	60	60	70	35	55	45

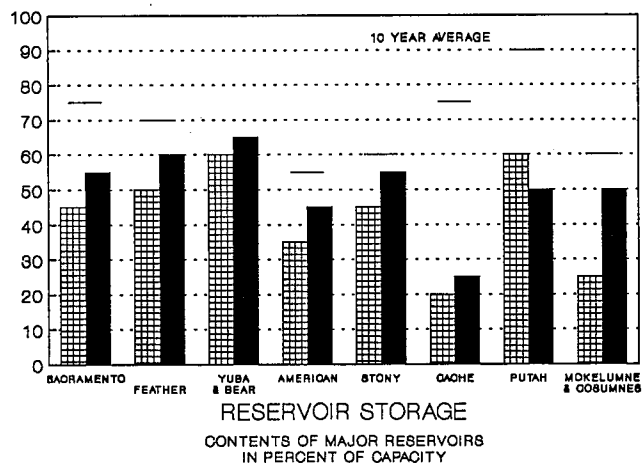


SACRAMENTO BASIN

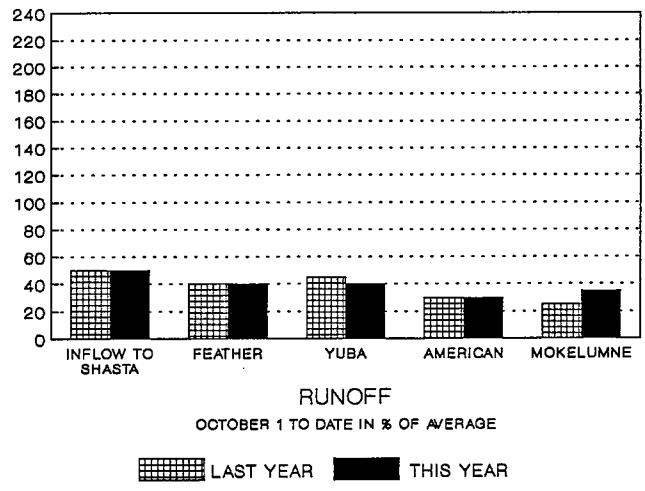
SNOWPACK - First of the month measurements made at 71 snow course indicate a basin wide snow water equivalent of 16.9 inches. This is 61 percent of the average for this date and 53 percent of the seasonal (April 1) average. Last year at this time, the pack was holding 20.3 inches of water.



PRECIPITATION - Seasonal precipitation (October 1 through the end of last month) on the Sacramento Basin was 67 percent of normal. Precipitation last month was about 67 percent of the monthly average. Seasonal precipitation at this time last year stood at 70 percent of normal.

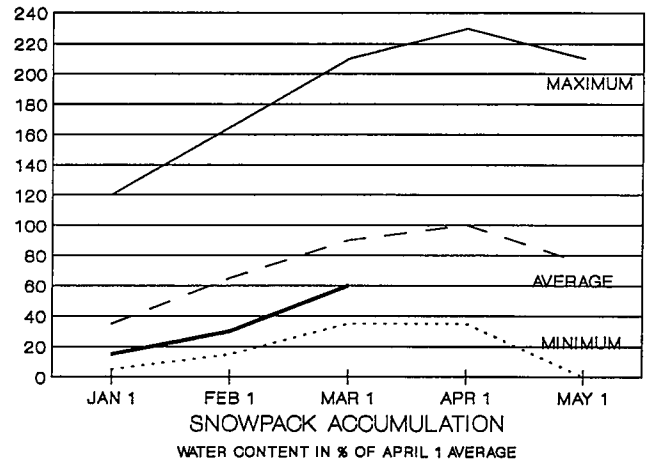


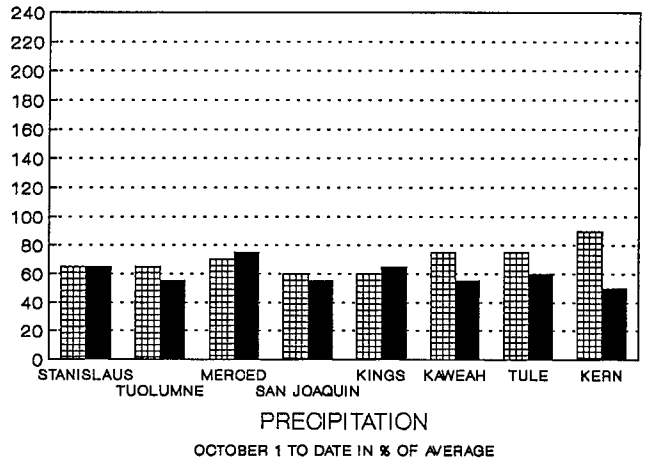
RESERVOIR STORAGE - First of the month storage in 43 reservoirs was 8.7 million acre-feet which is 76 percent of average. About 54 percent of available capacity was being used. Storage in these reservoirs was about 67 percent of average at this time last year.

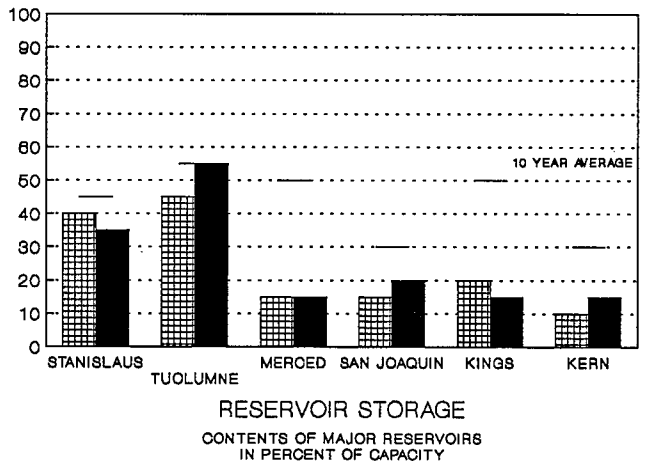


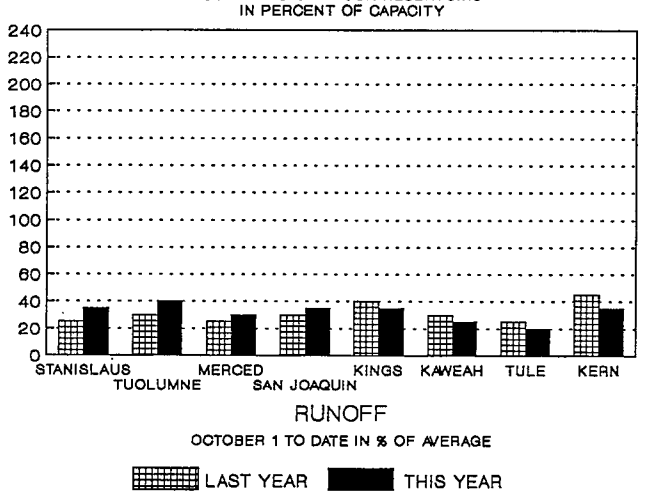
RUNOFF - Seasonal runoff from streams draining into the basin totaled 3.5 million acre-feet which is 41 percent of average for this period. Last year runoff for the same period was 42 percent of average.

The Sacramento River Index for the year is forecast at 9.7 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.









SAN JOAQUIN AND TULARE LAKE BASINS

SNOWPACK - First of the month measurements made at 64 San Joaquin Basin snow courses indicate a basin wide snow water equivalent of 18.1 inches which is 60 percent of average for this date and 53 percent of the seasonal (April 1) average. Last year at this time, the pack was holding 20.1 inches of water.

At the same time, 39 Tulare Lake Basin snow courses indicated a basin wide snow water equivalent of 12.5 inches which is 60 percent of the average for this date and 53 percent of the seasonal average. Last year at this time, the Basin was holding 15.7 inches of water.

PRECIPITATION - Seasonal precipitation (October 1 through the end of last month) on the San Joaquin Basin was 65 percent of normal. Precipitation last month was 72 percent of the monthly average. Seasonal precipitation at this time last year stood at 65 percent of normal.

Seasonal precipitation on the Tulare Lake Basin was 57 percent of normal. Precipitation last month was 75 percent of the monthly average. Seasonal precipitation at this time last year stood at 75 percent of normal.

RESERVOIR STORAGE - First of the month storage in 33 San Joaquin Basin reservoirs was 5.2 million acre-feet which is 74 percent of average. About 46 percent of available capacity was being used. Storage in these reservoirs at this time last year was 60 percent of average.

First of the month storage in 6 Tulare Lake Basin reservoirs was 304 thousand acre-feet which is 36 percent of average. About 15 percent of available capacity was being used. Storage in these reservoirs at this time last year was 43 percent of average.

RUNOFF - Seasonal runoff of streams draining into the San Joaquin Basin totaled 577 thousand acre-feet which is 34 percent of average for this period. Last year, runoff for this same period was 25 percent of average.

Seasonal runoff of streams draining into the Tulare Lake Basin totaled 189 thousand acre-feet which is 31 percent of average for this period. Last year, runoff for this same period was 40 percent of average.

DEPARTMENT OF WATER RESOURCES - CALIFORNIA DATA EXCHANGE CENTER
TELEMETERED SNOW WATER EQUIVALENTS - MARCH 1, 1990

BASIN NAME / STATION NAME	AGENCY	ELEV FEET	APR 1 AVG	INCHES OF WATER EQUIVALENT TODAY	PERCENT OF APR 1	24 HRS AGO	1 WEEK AGO
TRINITY RIVER							
PETERSON FLAT	USBR	6700	33.0	10.1	31%	10.1	10.0
RED ROCK MOUNTAIN	USBR	6700	44.0	17.8	40%	17.4	17.0
BONANZA KING	USBR	6450	40.5	----	----	----	13.4
SHIMMY LAKE	USBR	6200	49.9	16.6	33%	16.8	16.8
MIDDLE BOULDER #3	USBR	6200	27.1	12.4	46%	12.4	----
HIGHLAND LAKES	USBR	6030	34.0	9.1	27%	9.5	10.3
SCOTTS MOUNTAIN	USBR	5900	27.0	8.6	32%	8.9	8.8
MUMBO BASIN	USBR	5700	25.8	9.4	36%	9.8	11.2
BIG FLAT	USBR	5100	20.0	10.0	50%	10.0	10.2
SACRAMENTO RIVER							
CEDAR PASS	SCS	7100	18.1	10.6	59%	10.7	10.3
BLACKS MOUNTAIN	DWR	7286	8.6	6.0	70%	6.0	4.2
SAND FLAT	USBR	6750	42.4	----	----	----	----
MEDICINE LAKE	USBR	6700	32.7	12.7	39%	12.7	12.5
ADIN MOUNTAIN	SCS	6350	13.6	----	----	8.3	----
SNOW MOUNTAIN	USBR	5950	27.0	10.2	38%	10.4	9.8
SLATE CREEK	USBR	5600	30.0	11.4	38%	11.0	10.4
STOUTS MEADOW	USBR	5400	42.5	10.8	25%	10.8	10.2
FEATHER RIVER							
KETTLEROCK	DWR	7300	25.5	14.0	55%	14.2	14.6
GRIZZLY	DWR	6900	29.7	13.3	45%	13.4	13.9
PILOT PEAK	DWR	6800	52.6	15.4	29%	16.0	16.4
GOLD LAKE	DWR	6750	36.5	22.0	60%	22.0	21.8
HUMBUG	DWR	6500	28.0	19.0	68%	19.0	18.8
RATTLESNAKE	DWR	6100	14.0	10.1	72%	10.6	11.3
BUCKS LAKE	DWR	5750	44.7	27.6	62%	27.8	27.7
FOUR TREES	DWR	5150	20.0	18.0	90%	18.0	18.2
YUBA & AMERICAN RIV							
LAKE LOIS	DWR	8800	----	15.4	----	14.8	16.1
SCHNEIDERS	SMUD	8750	34.5	----	----	----	23.6
CAPLES LAKE COURSE	USBR	7800	30.9	16.3	53%	16.4	16.4
ALPHA	SMUD	7600	35.9	----	----	----	19.4
FORNI RIDGE	USBR	7600	37.0	----	----	12.0	12.0
SILVER LAKE	USBR	7100	22.7	14.2	62%	14.3	14.5
CENT SIERRA SNOW LAB	USFS	6950	33.6	----	----	18.2	19.1
HUYSINK	USBR	6600	42.6	15.6	37%	15.6	15.4
VAN VLECK	SMUD	6700	35.9	----	----	----	21.9
ROBBS SADDLE	SMUD	5900	21.4	----	----	----	15.1
GREEK STORE	USBR	5600	21.0	----	----	14.8	16.7
BLUE CANYON	USBR	5280	9.0	----	----	----	----
ROBBS POWERHOUSE	SMUD	5150	5.2	----	----	----	10.6
MOKEL. & STANIS. RIV							
DEADMAN CREEK	USBR	9250	37.2	14.3	38%	14.0	14.0
HIGHLAND MEADOW	USBR	8800	47.9	25.2	53%	25.0	24.8
GIANELLI MEADOW	USBR	8350	55.5	21.3	38%	21.3	21.1
LOWER RELIEF VALLEY	DWR	8100	41.2	20.4	50%	20.4	20.4
BLUE LAKES	SCS	8000	33.1	15.6	47%	15.7	15.6
MUD LAKE	SMUD	7900	44.9	----	----	----	27.6
STANISLAUS MEADOW	USBR	7750	47.5	21.7	46%	21.8	22.0
BLOODS CREEK	USBR	7200	35.5	17.3	49%	17.3	16.9
BLACK SPRINGS	USBR	6500	32.0	15.4	48%	15.4	15.3
TUOLUMNE & MERCED R.							
DANA MEADOWS	DWR	9800	27.7	13.6	49%	13.8	13.6
SLIDE CANYON	DWR	9200	----	21.3	----	21.2	21.1
SNOW FLAT	DWR	8700	44.1	----	----	16.3	15.7
TUOLUMNE MEADOWS	DWR	8600	22.6	10.0	44%	10.0	9.7
HORSE MEADOW	DWR	8400	48.6	24.6	51%	24.6	24.8
OSTRANDER LAKE	DWR	8200	34.8	----	----	18.3	18.3
PARADISE	DWR	7650	----	20.0	----	19.8	19.6
GIN FLAT	DWR	7050	34.2	13.8	40%	14.2	14.4
LOWER KIBBIE	DWR	6600	27.4	13.9	51%	14.2	14.0
SAN JOAQUIN RIVER							
VOLCANIC KNOB	USBR	10100	30.1	11.1	37%	11.1	11.1
AGNEW PASS	USBR	9450	32.3	18.9	59%	18.9	18.9
KAISER POINT	USBR	9300	37.8	13.6	36%	13.2	12.8
GREEN MOUNTAIN	USBR	7900	30.8	15.0	49%	15.0	15.0
TAMARACK SUMMIT	USBR	7600	30.5	16.9	56%	16.9	16.9

DEPARTMENT OF WATER RESOURCES - CALIFORNIA DATA EXCHANGE CENTER
TELEMETERED SNOW WATER EQUIVALENTS - MARCH 1, 1990

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
CHILKOOT MEADOW	USBR	7150	38.0	----	----	22.4	22.4
HUNTINGTON LAKE	USBR	7000	20.1	----	----	14.6	14.4
GRAVEYARD MEADOW	USBR	6900	18.8	12.0	64%	12.4	12.2
POISON RIDGE	USBR	6900	28.9	23.6	82%	23.6	23.4
KINGS RIVER							
BISHOP PASS	DWR	11200	----	13.1	----	12.4	12.4
CHARLOTTE LAKE	DWR	10400	----	10.6	----	10.6	10.3
STATE LAKES	USCE	10300	29.0	11.3	39%	----	10.6
MITCHELL MEADOW	USCE	10375	32.9	15.4	47%	----	15.4
BLACKCAP BASIN	USBR	10300	34.3	15.0	44%	14.4	13.7
UPPER BURNT CORRAL	DWR	9700	34.6	16.3	47%	15.7	15.7
WEST WOODCHUCK MDW	USCE	9100	32.8	13.4	41%	----	12.7
BIG MEADOWS	DWR	7600	25.9	14.3	55%	14.3	14.2
KAWEAH & TULE RIVERS							
QUAKING ASPEN	DWR	7200	21.0	15.1	72%	15.0	14.6
GIANT FOREST	USCE	6412	10.0	9.2	92%	9.7	10.8
KERN RIVER							
UPPER TYNDALL CREEK	USCE	11450	27.7	12.2	44%	12.3	12.4
CRABTREE	DWR	10700	19.8	6.6	33%	6.6	6.4
CHAGOOPA PLATEAU	DWR	10300	21.8	4.6	21%	4.6	4.6
PASCOES	USCE	9150	24.9	11.7	47%	11.6	11.4
TUNNEL	DWR	8950	15.6	6.0	38%	6.0	6.2
WET MEADOW	USCE	8900	30.3	13.7	45%	13.7	13.1
CASA VIEJA MDW	DWR	8400	20.9	11.1	53%	11.1	11.1
BEACH MEADOW	DWR	7630	11.0	3.2	29%	3.2	2.9
SURPRISE VALLEY AREA							
DISMAL SWAMP	SCS	7050	29.2	16.3	56%	16.2	16.3
TRUCKEE RIVER							
MOUNT ROSE	SCS	9000	35.9	----	----	----	----
MOUNT ROSE SKI AREA	SCS	8850	38.5	20.1	52%	20.0	20.1
INDEPENDENCE LAKE	SCS	8450	41.4	20.3	49%	20.3	20.4
BIG MEADOWS	SCS	8700	25.7	10.5	41%	10.5	10.6
INDEPENDENCE CAMP	SCS	6500	21.8	10.6	49%	10.7	12.4
INDEPENDENCE CREEK	SCS	6500	12.7	9.8	77%	9.9	10.2
LAKE TAHOE BASIN							
HEAVENLY VALLEY	SCS	8800	28.1	11.6	41%	11.7	11.7
HAGANS MEADOW	SCS	8000	16.5	7.9	48%	7.9	8.3
MARLETTE LAKE	SCS	8000	21.1	11.8	56%	11.9	11.8
ECHO PEAK	SCS	7800	39.5	21.8	55%	22.0	21.4
RUBICON NO. 2	SCS	7500	29.1	12.9	44%	12.8	12.6
WARD CREEK NO. 3	SCS	6750	39.4	18.8	48%	18.8	18.8
FALLEN LEAF LAKE	SCS	6300	7.0	2.9	41%	3.0	3.5
CARSON RIVER							
EBBETTS PASS	SCS	8700	38.8	15.4	40%	15.4	15.4
WET MEADOWS	SCS	8050	38.8	22.4	58%	22.5	25.9
POISON FLAT	SCS	6900	16.2	----	----	----	----
WALKER RIVER							
VIRGINIA LAKES RIDGE	SCS	9200	20.3	7.7	38%	7.8	7.7
LOBDELL LAKE	SCS	9200	17.3	8.6	50%	8.5	8.3
SONORA PASS BRIDGE	SCS	8750	26.0	16.6	64%	13.5	12.5
LEAVITT MEADOWS	SCS	7200	8.0	6.1	76%	6.1	6.3
OWENS RIVER/MONO LK.							
GEM PASS	LADWP	10750	31.7	18.2	57%	18.8	18.0
SAWMILL MEADOW	DWR	10300	19.4	9.7	50%	9.7	10.3
COTTONWOOD LAKES	LADWP	10200	11.6	11.0	94%	11.0	5.1
BIG PINE #3	LADWP	9800	17.9	8.5	48%	9.2	8.5
SOUTH LAKE	LADWP	9600	16.0	9.8	62%	9.8	9.8
MAMMOTH PASS	DWR	9500	42.4	26.2	62%	26.2	26.0

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
LAHONTAN	50	70	90	100	70

FORECASTS OF APRIL-JULY UNIMPAIRED RUNOFF FOR CENTRAL VALLEY STREAMS MARCH 1, 1990

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	160	53	
McCloud River at Shasta Lake(2)	430	850	185	270	63	
Pit River at Shasta Lake(2)	1,075	1,796	480	730	68	
Total inflow to Shasta Lake(1)	1,880	3,189	726	1,180	63	820-1850
Sacramento River above Bend Bridge, near Red Bluff	2,569	4,674	943	1,550	60	1,100-2,600
Feather River						
Feather River at Lake Almanor near Pratville (2)	345	675	120	220	64	
North Fork at Pulga (2)	1,080	2,416	243	630	58	
Middle Fork near Clio (3)	86	518	4	30	35	
South Fork at Ponderosa Dam (2)	116	267	13	65	56	
Total inflow to Oroville Reservoir	1,971	4,676	392	1,100	56	650-1,950
Yuba River						
North Yuba below Goodyears Bar (2)	298	647	51	180	60	
Inflow to Jackson Mdws and Bowman Reservoirs (2)	115	236	25	70	61	
South Yuba at Langs Crossing (2)	232	481	57	160	69	
Yuba River at Smartville	1,107	2,424	200	670	61	380-1,150
American River						
North Fork at North Fork Dam (2)	274	716	43	150	55	
Middle Fork near Auburn (2)	548	1,406	100	320	58	
Silver Creek below Camino Diversion Dam (2)	178	386	37	110	62	
Total inflow to Folsom Reservoir	1,366	3,074	229	760	56	400-1,350
Sacramento River at Sacramento						
SAN JOAQUIN RIVER BASIN						
Cosumnes River at Michigan Bar	140	363	8	60	43	20-120
Mokelumne River						
North Fork near West Point (4)	437	829	104	270	62	
Total inflow to Pardee Reservoir	490	1,065	102	290	59	160-500
Stanislaus River						
North Fork inflow to McKay's Point Dam	224	503	34	130	58	
Middle Fork below Beardsley Dam (2)	352	702	64	210	60	
Total inflow to Melones Reservoir	753	1,710	116	430	57	230-730
Tuolumne River						
Cherry Creek and Eleanor Creek near Hetch Hetchy (2)	322	727	97	190	59	
Tuolumne River near Hetch Hetchy (2)	618	1,392	153	400	65	
Total inflow to Don Pedro Reservoir	1,254	2,682	301	720	57	430-1,160
Merced River						
Merced River at Pohono Bridge (2)	371	888	80	230	62	
Total inflow to Exchequer Reservoir	654	1,587	123	360	55	220-620
San Joaquin River						
San Joaquin River at Mammoth Pool (2)	1,014	2,279	235	550	54	
Big Creek below Huntington Lake (2)	95	264	11	50	53	
South Fork near Florence Lake (2)	202	511	58	120	59	
Total inflow to Millerton Lake	1,296	3,355	262	670	52	370-1,120
San Joaquin River near Vernalis						
TULARE LAKE BASIN						
Kings River						
North Fork Kings River near Cliff Camp (2)	243	565	50	120	49	
Total inflow to Pine Flat Reservoir	1,266	3,114	273	620	49	360-1,050
Kaweah River at Terminus Reservoir	303	814	61	140	46	80-240
Tule River at Success Reservoir	70	256	2	19	27	10-45
Kern River						
Kern River near Kernville (2)	389	1,203	83	150	39	
Total inflow to Isabella Reservoir	492	1,657	84	180	37	130-370

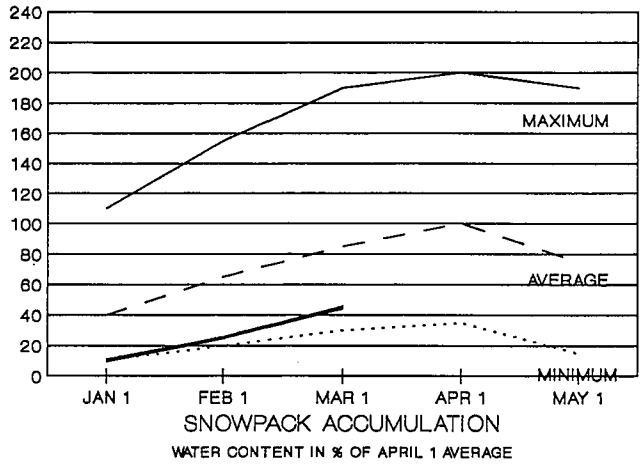
(1) All 50-year averages are based on data for water years 1936-1985 except:
(2) 45-year average based on years 1936-80. (4) 36-year average based on years 1936-71.
(3) 44-year average based on years 1936-79. (5) See inside back cover for definition of unimpaired runoff and 80 percent probability ranges.

FORECASTS OF WATER YEAR UNIMPAIRED RUNOFF FOR CENTRAL VALLEY STREAMS MARCH 1, 1990

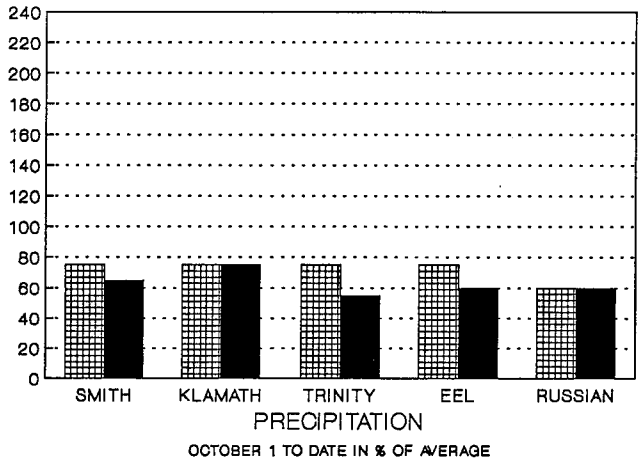
Water Year October through September Unimpaired Runoff in 1,000's Acre-Feet												
HISTORICAL			*	*	DISTRIBUTION						FORECASTS	
50 Year Average	Maximum of Record	Minimum of Record	October through January	February	March	April	May	June	July	August and September	Water Year Forecast	Percent of Average
859	1,964	165										
1,286	2,353	577										
3,169	5,150	1,484										
6,090	10,796	2,479	1,180	280	580	440	320	230	190	350	3,570 (2,800-4,750)	59
8,856	17,180	3,294	1,610	370	770	580	430	300	240	400	4,700 (3,900-6,500)	53
786	1,269	366										
2,446	4,400	666										
219	637	24										
292	562	32										
4,754	9,492	994	600	180	390	470	370	160	100	130	2,400 (1,750-3,700)	50
565	1,056	102										
174	292	30										
357	565	98										
2,460	4,926	369	290	100	220	290	280	80	20	20	1,300 (950-2,000)	53
612	1,234	66										
1,066	2,575	144										
314	705	59										
2,837	6,381	349	210	100	240	330	310	100	20	10	1,320 (900-2,100)	47
												51
407	1,253	20	20	15	40	35	20	4	1	0	135 (70-240)	33
626	1,009	197										
776	1,800	129	54	20	55	110	140	35	5	1	420 (270-630)	54
483	929	88										
1,198	2,952	155	80	25	75	160	190	65	15	10	620 (380-970)	52
461	1,147	123										
775	1,661	258										
1,951	4,430	383	130	50	130	220	330	150	20	10	1,040 (690-1,560)	53
460	1,020	92										
1,023	2,859	150	50	25	60	120	170	60	10	5	500 (320-800)	49
1,337	2,964	308										
112	298	14										
248	653	71										
1,861	4,642	362	90	35	95	170	280	170	50	30	920 (560-1,450)	49
												51
282	607	58										
1,745	4,294	383	70	30	75	160	260	160	40	25	820 (510-1,350)	47
468	1,402	92	18	7	25	45	65	25	5	5	195 (120-320)	42
159	615	16	5	4	10	12	6	1	0	0	38 (25-80)	24
575	1,577	163										
749	2,309	175	43	12	30	45	65	50	20	20	285 (210-510)	38

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

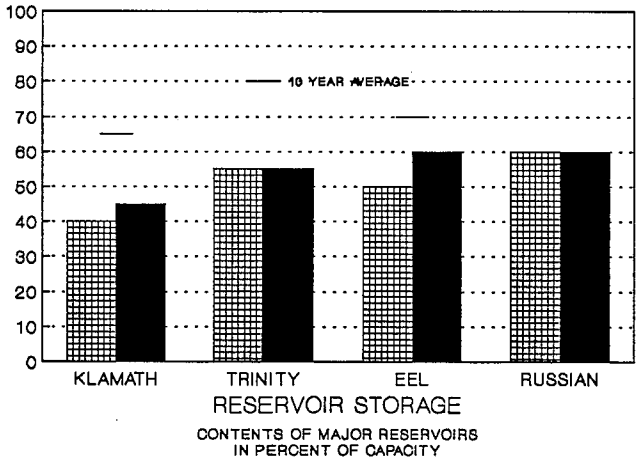
NORTH COAST AREA



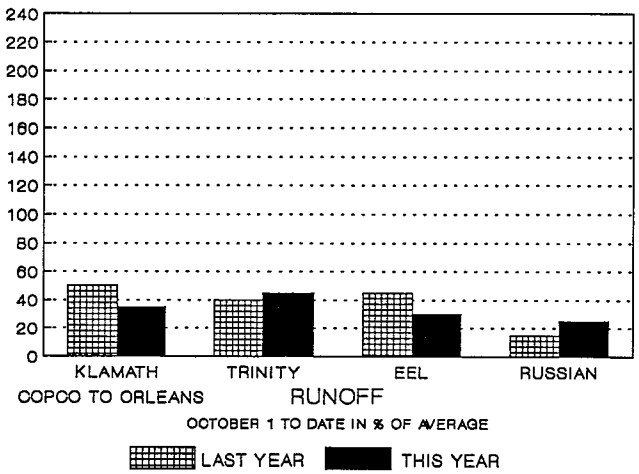
SNOWPACK - First of the month measurements made at 12 snow courses indicate an area wide snow water equivalent of 13.2 inches. This is 51 percent of the average for this date and 45 percent of the seasonal (April 1) average. Last year at this time the pack was holding 16.9 inches of water.



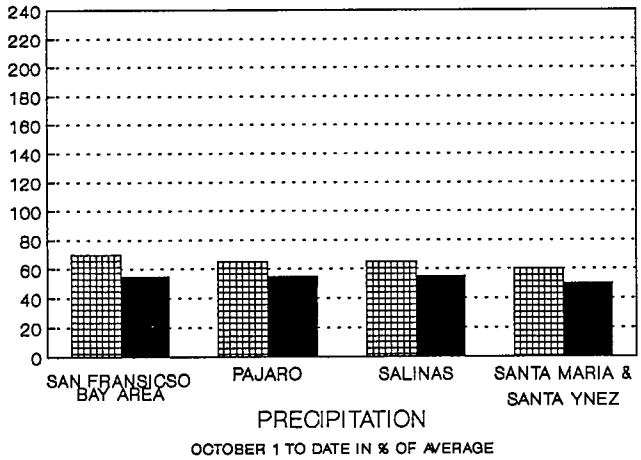
PRECIPITATION - Seasonal precipitation (October 1 through the end of last month) on this area was 63 percent of normal. Precipitation last month was about 66 percent of the monthly average. Seasonal precipitation at this time last year stood at 70 percent of normal.



RESERVOIR STORAGE - First of the month storage in 7 reservoirs was 1.7 million acre-feet which is 74 percent of average. About 54 percent of available capacity was being used. Storage in these reservoirs at this time last year was 70 percent of average.



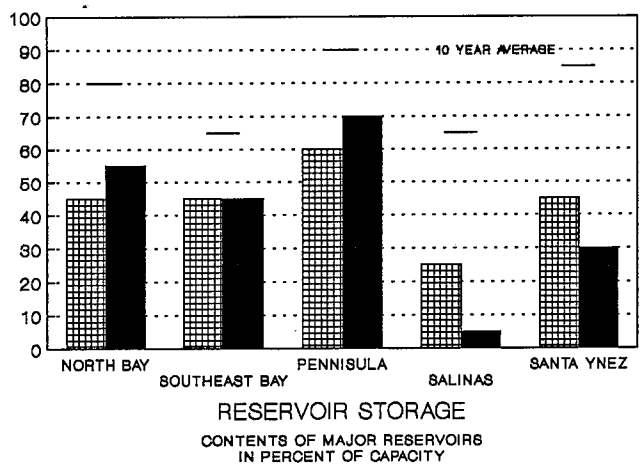
RUNOFF - Seasonal runoff of streams draining the area totaled 2.6 million acre-feet which is 34 percent of average for this period. Last year, runoff for the same period was 45 percent of average.



SAN FRANCISCO AND CENTRAL COAST AREAS

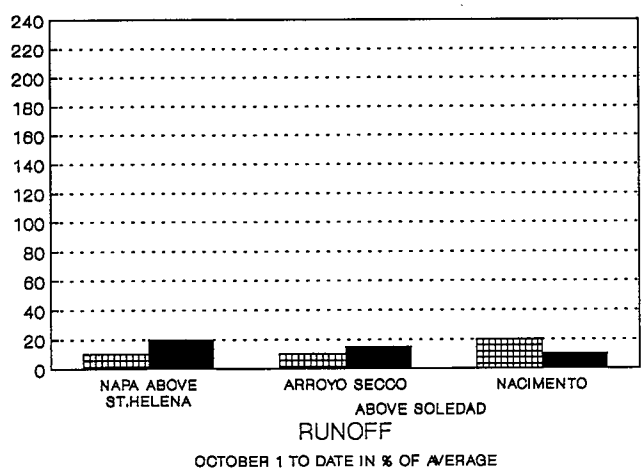
PRECIPITATION - Seasonal precipitation (October 1 through the end of last month) on the San Francisco Bay area was 55 percent of normal. Precipitation last month was 64 percent of the monthly average. Seasonal precipitation at this time last year stood at 70 percent of normal.

Seasonal precipitation on the Central Coast area averaged 52 percent of normal. Precipitation last month was 64 percent of the monthly average. Seasonal precipitation at this time last year was 65 percent of average.



RESERVOIR STORAGE - First of the month storage in 17 major Bay area reservoirs was 347 thousand acre-feet which is 70 percent of average. About 50 percent of available capacity was being used. Storage in these reservoirs at this time last year was 65 percent of average.

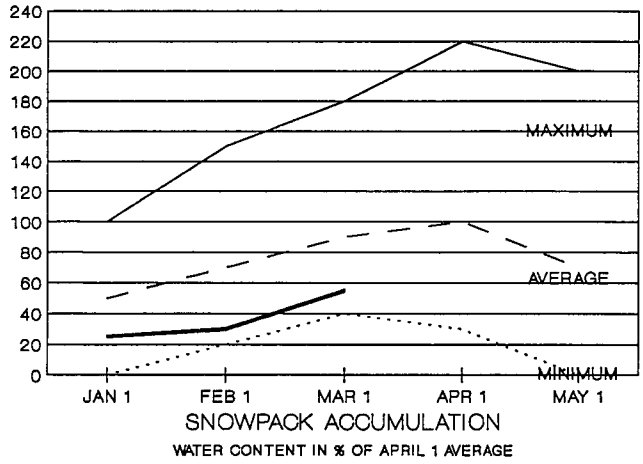
First of the month storage in 6 major Central Coast reservoirs was 127 thousand acre-feet which is 19 percent of average. About 13 percent of available capacity was being used. Storage in these reservoirs at this time last year was 45 percent of average.

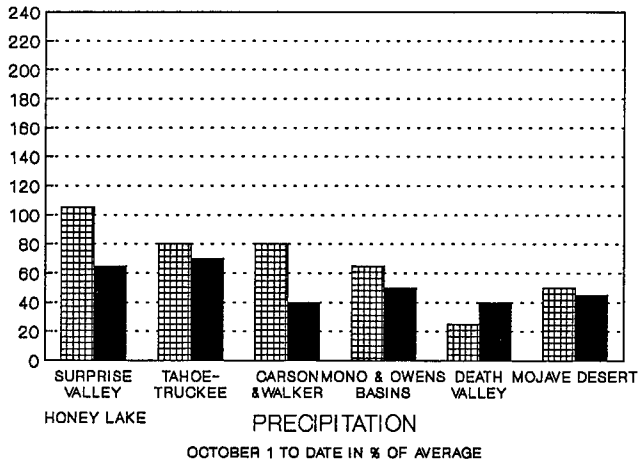


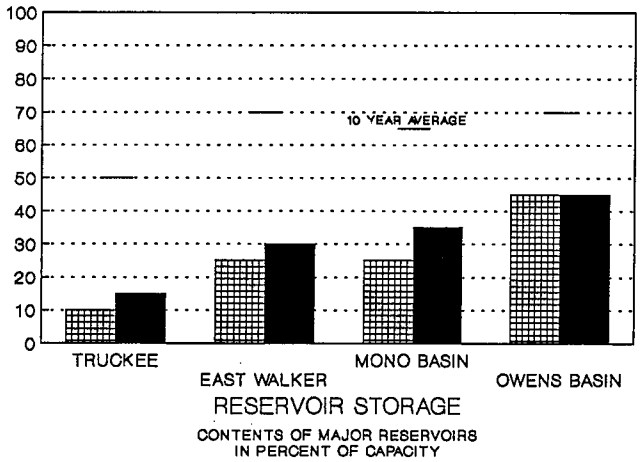
RUNOFF - Seasonal runoff of selected streams draining the San Francisco Bay area totaled 11 thousand acre-feet which is 21 percent of average for this period. Last year, runoff for this same period was 10 percent of average.

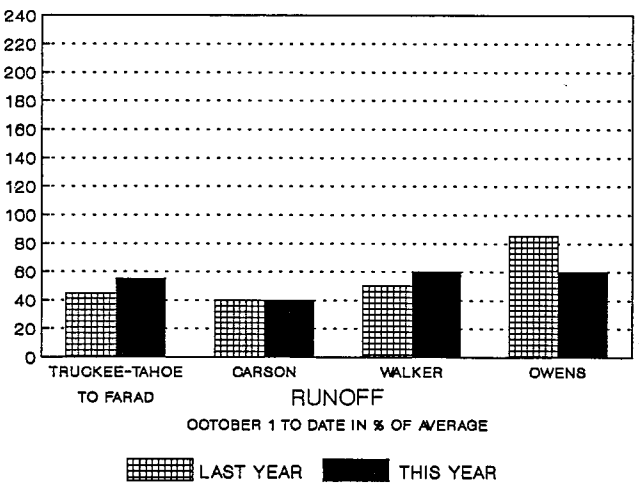
Seasonal runoff of selected Central Coast streams totaled 26 thousand acre-feet which is 12 percent of average for this period. Last year, runoff for this same period was 15 percent of average.

LAST YEAR THIS YEAR









NORTH AND SOUTH LAHONTAN AREA

SNOWPACK - First of the month measurements made at 11 North Lahontan snow courses indicate an area wide snow water equivalent of 16.1 inches which is 63 percent for this date and 56 percent of the seasonal (April 1) average. Last year at this time, the pack was holding 16.2 inches of water.

At the same time, 23 South Lahontan courses indicated an area wide snow water equivalent of 12.6 inches which is 60 percent of the average for this date and 53 of the seasonal average.

PRECIPITATION - Seasonal precipitation (October 1 through the end of last month) over the North Lahontan area averaged 54 percent of normal. Seasonal precipitation at this time last year stood at 60 percent of normal.

Seasonal precipitation over the South Lahontan area averaged 47 percent of normal. Last month's precipitation was 39 percent of the monthly average. Seasonal precipitation at this time last year stood at 30 percent of normal.

RESERVOIR STORAGE - First of the month storage in 5 North Lahontan reservoirs was 176 thousand acre-feet which is 28 percent of average. About 18 percent of available capacity was being used. Storage in these reservoirs at this time last year was 15 percent of average.

First of the month storage in 8 South Lahontan reservoirs was 212 thousand acre-feet which is 74 percent of average. About 53 percent of available capacity was being used. Storage in these reservoirs at this time last year was 70 percent of average.

RUNOFF - Seasonal runoff of streams draining the North Lahontan area totaled 114 thousand acre-feet which is 56 percent of average for this period. Last year, runoff for this same period was 45 percent of average.

Seasonal runoff of streams draining the South Lahontan area was estimated to be about 48 thousand acre-feet which is 60 percent of average for this period. Last year, runoff for this same period was about the same.

FORECASTS OF APRIL-JULY UNIMPAIRED RUNOFF FOR SELECTED CALIFORNIA STREAMS

MARCH 1, 1990

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	350	52
Scott River at Ft. Jones	200			90	45
Upper Klamath Lake(1)(2)(5)	521			250	48
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	105	54
West Carson River at Woodfords	55	131	12	32	58
East Walker River near Bridgeport	68	209	7	25	37
West Walker River near Coleville	154	330	35	90	58
Owens River(1)(3)	310			192	61

(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

SOUTH COAST AND COLORADO RIVER AREAS

PRECIPITATION - Seasonal precipitation (October 1 through the end of last month) on the South Coast was 53 percent of normal. Precipitation last month was 75 percent of the monthly average. Seasonal precipitation at this time last year stood at 75 percent of normal.

Seasonal precipitation on the Colorado River area was 25 percent of normal. Precipitation last month was 23 percent of the monthly average. Seasonal precipitation at this time last year was 50 percent of average.

RESERVOIR STORAGE - First of the month storage in 29 South Coast reservoirs was 1.3 million acre-feet which is 99 percent of average. About 65 percent of available capacity was being used. Storage in these reservoirs at this time last year was 105 percent of average.

First of the month combined storage in Lakes Powell, Mead, Mohave and Havasu was 42.2 million acre-feet which is 114 percent of average. About 79 percent of available capacity was being used.

RUNOFF - Seasonal runoff of selected South Coast streams totaled 5 thousand acre-feet which is 15 percent of average. Last year, runoff for the same period was 55 percent of average.

UPPER COLORADO

The March 1 snowpack in the Upper Colorado River Basin according to the U.S. Soil Conservation Service was 65 percent of average and ranges from 43 percent in the San Juan Basin to 80 percent in the Green River Basin.

The April through July inflow to Lake Powell is forecast to be 3.6 million acre-feet which is 45 percent of normal.

CENTRAL VALLEY PROJECT

Water year forecasts for runoff into major CVP storage reservoirs ranged from 45 percent to 60 percent of average. CVP storage on September 1, 1989 was 5.1 million acre-feet. As of February 28, 1990 it had increased to only 5.9 million acre-feet, which is about 71 percent of normal for this date.

On the basis of the February water supply forecasts, the CVP announced deficiencies of 25 percent on deliveries to water rights holders on the Sacramento and at the Mendota Pool. Most other contractors will have 50 percent deficiencies except those whose contracts specify lesser amounts. No change in the deficiencies will be made on the basis of the March forecasts which were only slightly different from those of February.

STATE WATER PROJECT

SWP conservation storage (Oroville and San Luis) increased 160 thousand acre-feet during February to 2.86 million acre-feet. Last fall its low was 1.8 million acre-feet. Other SWP reservoir storages increased 57 thousand acre-feet to a total of 660 thousand acre-feet (93 percent full).

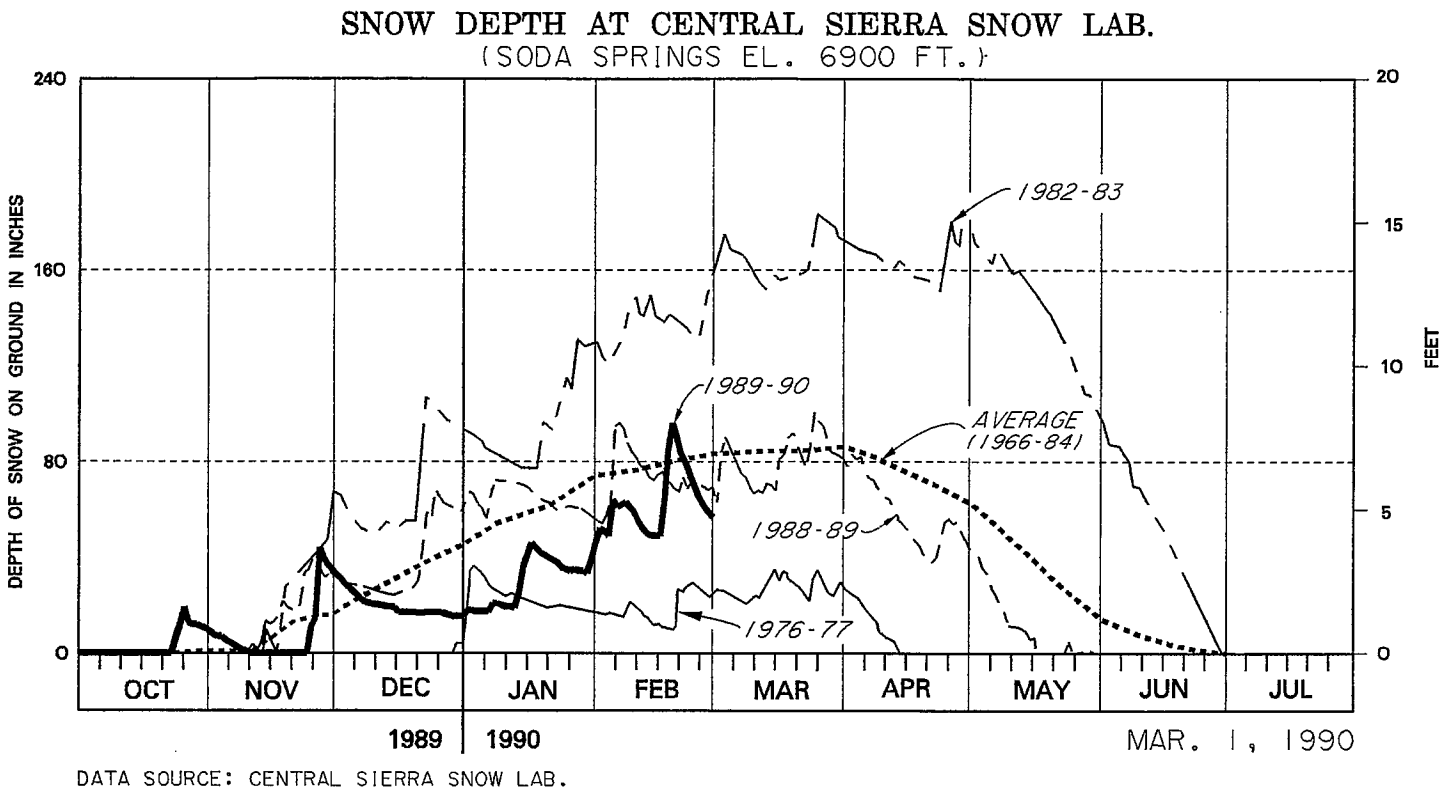
The forecasted water supply in the Feather River Basin with median conditions for the remainder of the season is only about 53 percent of average. Due to the dry conditions, the SWP will not be able to support deliveries at the level approved in December, 1989 and still meet the target carryover storage of 1.7 million acre-feet at the end of the water year. Forecasted water supply at the 99 percent exceedence level will require reductions to agricultural water of about 50 percent.

MAJOR WATER DISTRIBUTION PROJECTS

RESERVOIR STORAGE

(AVERAGES BASED ON PERIOD RECORD)

RESERVOIR	CAPACITY 1,000 AF	AVERAGE STORAGE 1,000 AF	STORAGE AS OF FEBRUARY 28 1989 1,000 AF	1990 1,000 AF	PERCENT AVERAGE
STATE WATER PROJECT					
Oroville	3,540	2,660	1,717	1,935	73
San Luis SWP	1,060	940	521	932	99
Lake Del Valle	77	33	28	34	101
Silverwood	73	66	67	72	109
Pyramid Lake	171	162	160	161	99
Castaic Lake	324	263	303	283	107
Perris Reservoir	132	114	123	126	111
CENTRAL VALLEY PROJECT					
Clair Engle Lake	2,450	1,939	1,307	1,340	69
Shasta Lake	4,550	3,446	1,896	2,429	70
Whiskeytown	241	208	205	206	99
Folsom	1,010	590	398	378	64
New Melones	2,420	1,669	938	800	48
Millerton Lake	521	309	232	205	66
San Luis CVP	980	767	689	728	95
COLORADO RIVER PROJECT					
Lake Mead	26,300	19,709	23,279	21,771	110
Lake Powell	25,000	15,070	21,130	18,196	121
Lake Mojave	1,810	1,639	1,694	1,676	102
Lake Havasu	619	537	537	540	101
EAST BAY MUNICIPAL UTILITY DISTRICT					
Pardee	210	177	163	196	111
Camanche	432	263	9	187	71
East Bay (4 reservoirs)	151	129	130	126	97
CITY & COUNTY OF SAN FRANCISCO					
Hetch Hetchy	360	133	102	92	69
Cherry Lake	269	105	35	119	114
Lake Eleanor	28	10	9	2	20
South Bay (4 reservoirs)	223	172	117	124	72
CITY OF LOS ANGELES(DWP)					
Crowley Lake(Long Valley Reservoir)	183	132	95	90	69
Grant Lake	48	24	11	20	83
Other Aqueduct Storage(6 reservoirs)	95	69	47	55	80



**********SNOW LINES**********

Please note the CHANGES IN THE GRAPHICAL SCALES of many of the bar charts contained within this publication. The range of the bar chart scales have been standardized at 0 to 240% for snowpack, precipitation and runoff and 0 to100% for storage. This change will facilitate visual inter-basin comparisons.

The U. S. SOIL CONSERVATION SERVICE, which operates the Snow Surveys Programs in all other western states, is modifying these programs. Both the method of collecting data and disseminating forecasts are being changed. Much greater emphasis is being placed on telemetered snow data and the number of manually measured snow courses have been reduced. Generalized statewide bulletins similar to this have been eliminated. Forecasts are available via computer or from localized fact sheets.

The "MINI" bulletin has been eliminated as was announced in the May 1989 issue of this bulletin. The water supply forecasts which had been in the "Mini" can be obtained electronically via the California Data Exchange's "TALKY" program. If you are interested in obtaining forecast or other hydrologic data, please contact Cecilia Holified at telephone number (916) 322-2380.

GEOGRAPHIC DIVERSITY is a characteristic of California. We have the lowest spot in North America, Death Valley which is 282 feet below sea level and less than 100 miles from the highest point in the contiguous 48 states, Mount Whitney, 14,498 feet. Temperature extremes vary from 134 degrees, again at Death Valley, to 45 degrees below zero at Boca Reservoir. Annual precipitation figures range from zero at Death Valley and Bagdad to a soggy 252.9 inches of rain at Camp Six on the North Coast. This later record was set during the winter of 1981-82.

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 date for the period 1936-1985 (50 years, except for data sites estabilshed after 1936).

PRECIPITATION—Averages are based on the period 1931-1980 (50 years)

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 assume 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 state 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 943836, Sacramento, CA 94236-0001, (916) 445-2196.

On Front Cover

Preparing to service the Bishop Pass snow sensor

Photo by Dave Hart

State of California—Resources Agency
Department of Water Resources
P.O. Box 942836
Sacramento, CA 94236-0001

FIRST CLASS