State of California

The Resources Agency

Memorandum

Date : April 20, 1995

To : Edward F. Huntley
Raymond D. ~~Hart~~

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Water Resources Evaluation

From : **Department of Water Resources**

Subject: 1990 Annual Water Use - Water Supply Budgets

This report is the third in a series that provides field information on population, land use, water use, surface water supply, and ground water. The data reported are based on precipitation, temperature, runoff, water supply and water use measurements for 1990 rather than normalized conditions as assumed in a base year for Bulletin 160. Provided are 1990 data on population by planning subarea and by county; crop acreages by PSA and by county; water use and supplies by PSA; and ground water changes from 1989 to 1990.

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Overview

This report is the third in a series that provides actual field information on annual population, land use, water use, surface water supply and ground water. (The two previous annual water use reports were published for the years 1988 and 1989.) The data in this report are based on actual precipitation, temperature, runoff, water supply and use measurements rather than normalized conditions as assumed in a base year for Bulletin 160. The annual reports provide information about changes in population, land use, ground water, and water use in California. The figures in the tables will not always result in the totals shown due to rounding.

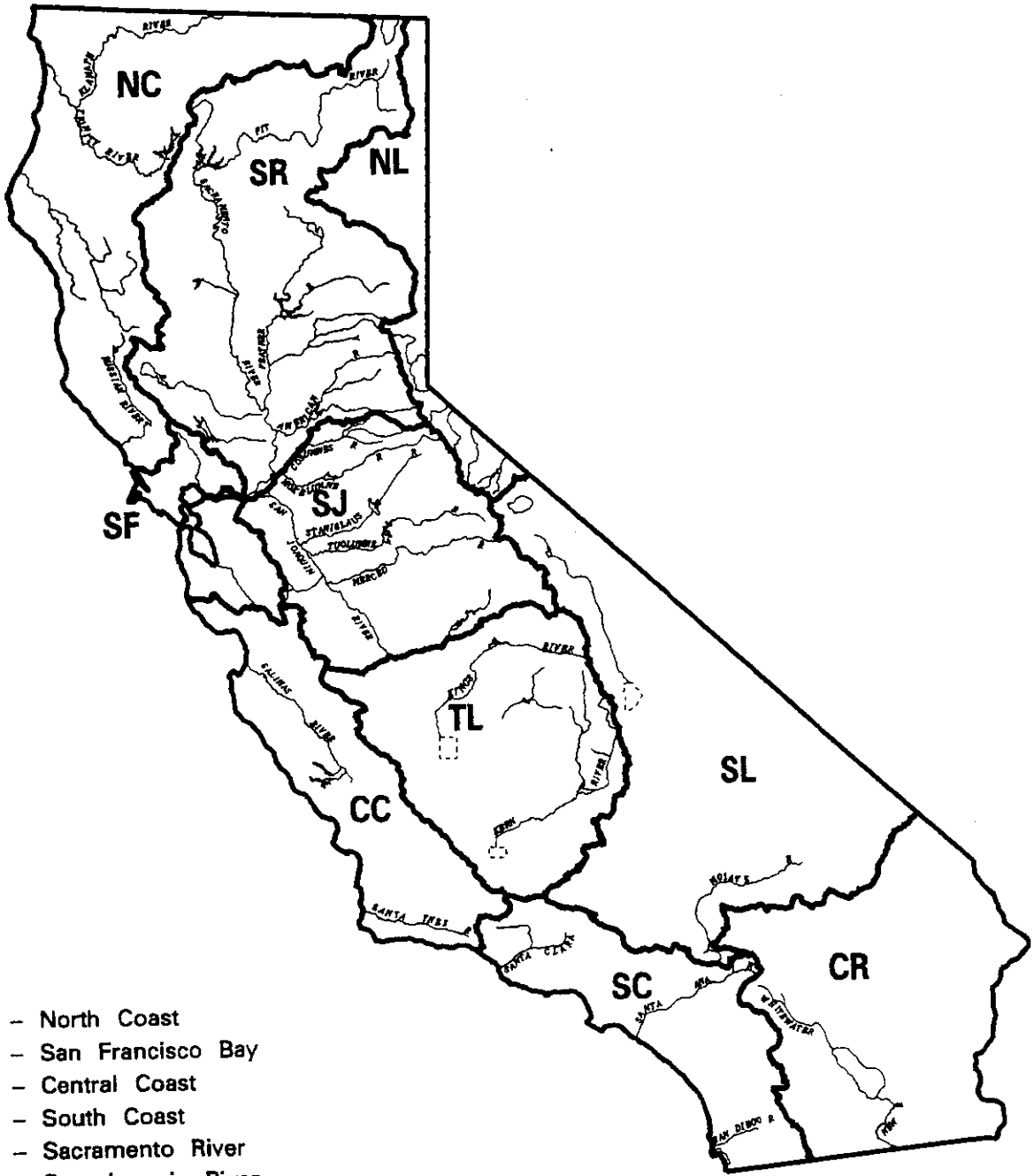
Water year 1990 was the fourth consecutive year of below–normal rainfall and runoff in California. Statewide, precipitation averaged 69 percent, runoff averaged 45 percent, and reservoir storage dropped 3.1 million acre–feet to 60 percent of normal by the end of the year. Use of carryover storage helped to reduce the impacts of drought. Ground water elevations continued to decline as the ground water reservoirs also played a major role in meeting the demands for water. The urban and agriculture sectors used more ground water to make up for reductions in surface supplies, although some small coastal urban areas imposed rationing programs. The environmental sector saw refuges receiving slightly below normal supplies, but instream flows, Delta outflow and the Wild and Scenic rivers natural flows were at drought levels.

Table 1. Reservoir Storage as of September 30

(1,000 acre-feet)

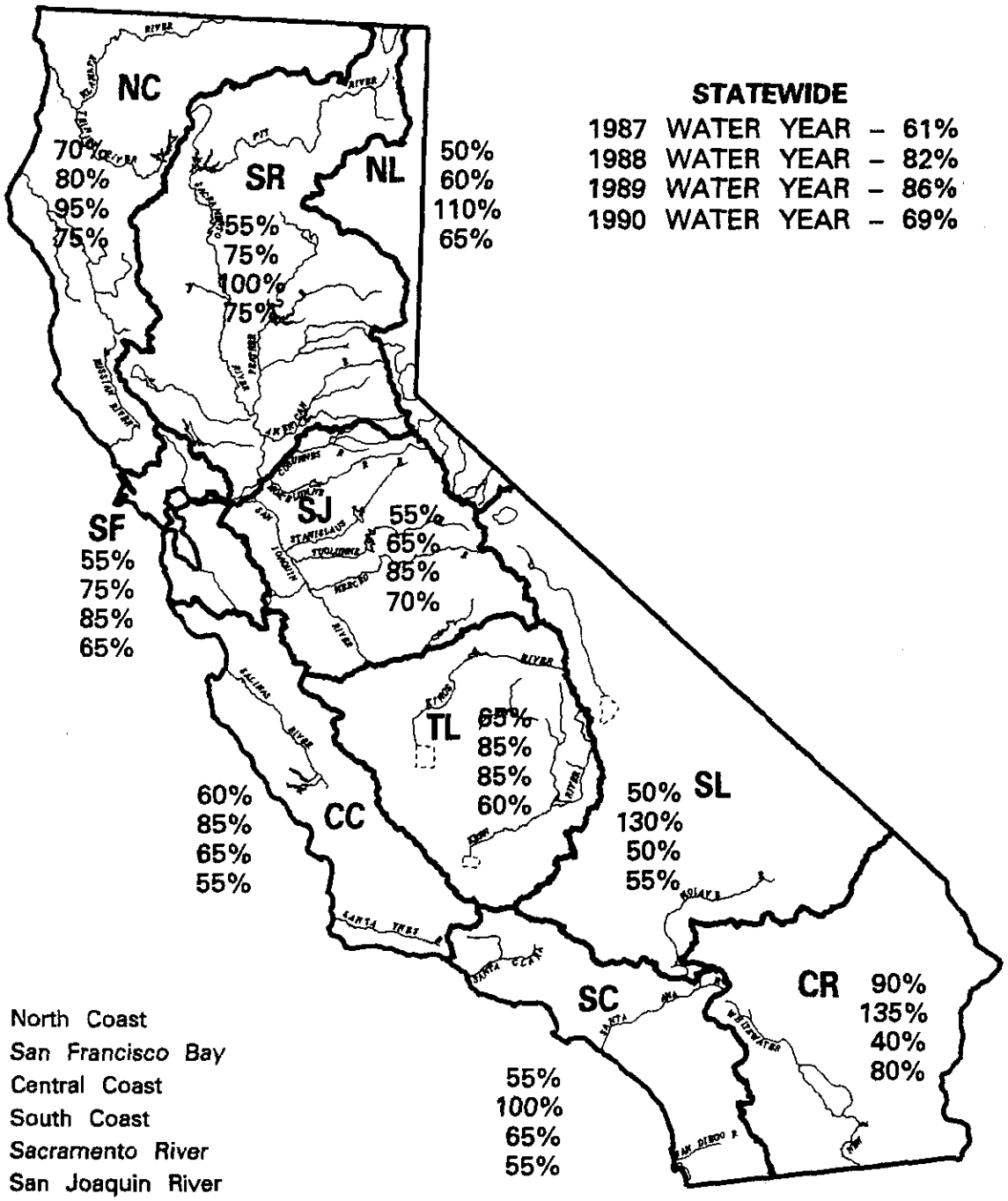
Region	Number of Reservoirs	Historic Average	1977	1987	1988	1989	1990
North Coast	7	2,112	294	2,064	1,748	1,684	1,479
San Francisco Bay	18	397	285	282	320	348	310
Central Coast	6	551	228	534	330	120	93
South Coast	29	1,117	838	1,281	1,247	1,140	1,201
Sacramento River	43	10,305	4,219	8,738	6,994	8,871	6,659
San Joaquin River	33	6,454	1,525	4,884	3,645	3,894	3,348
Tulare Lake	6	699	200	429	239	243	170
North Lahontan	5	585	36	448	89	221	106
South Lahontan	8	298	153	260	215	200	206
California	155	22,518	7,778	18,920	14,827	16,721	13,572
Percent of Average			35	84	66	74	60

Figure 1. Hydrologic Regions in California



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

Figure 2. Water Year Precipitation in Percent of Average
1987 to 1990
by Hydrologic Region

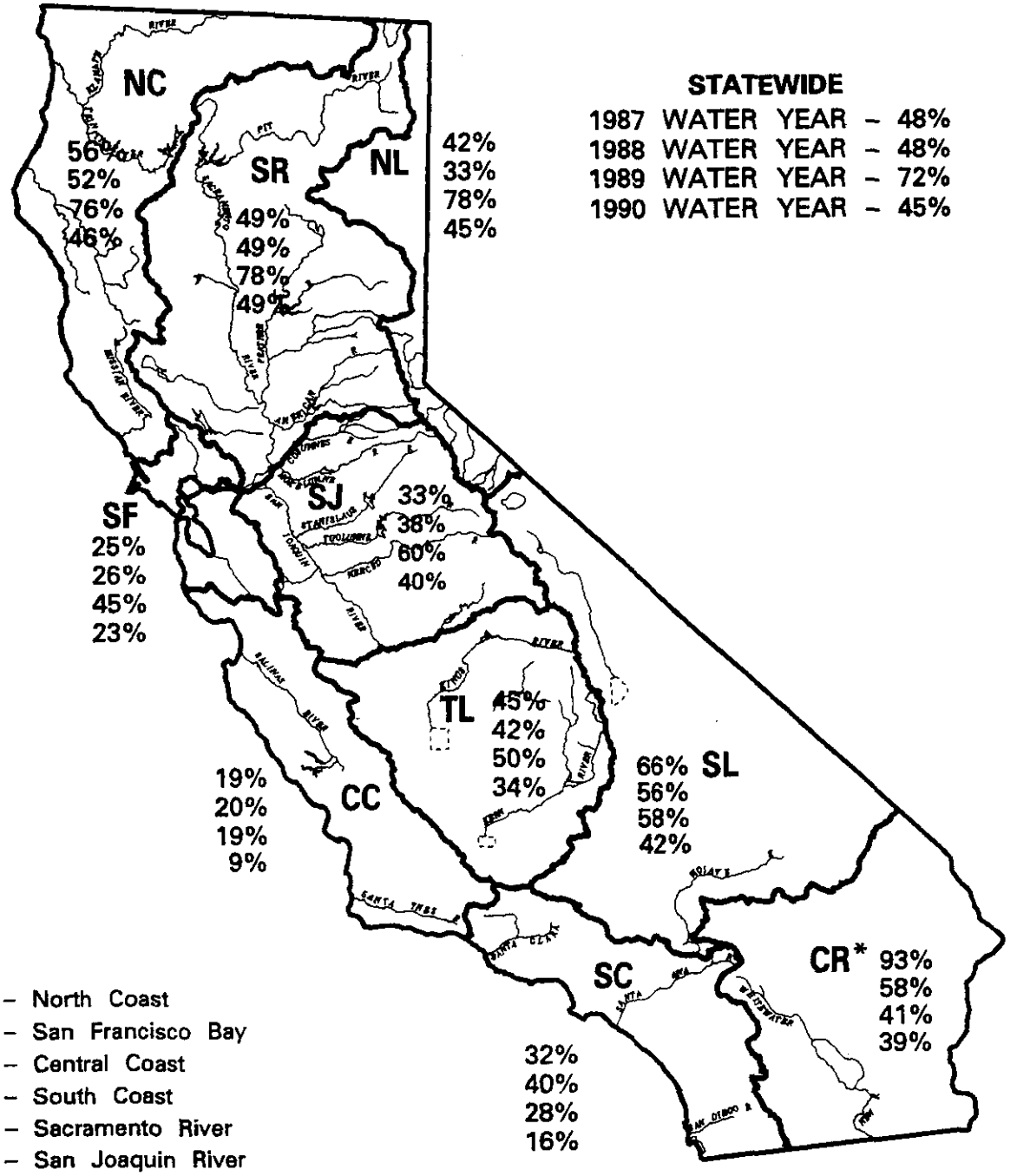


STATEWIDE

1987 WATER YEAR – 61%
1988 WATER YEAR – 82%
1989 WATER YEAR – 86%
1990 WATER YEAR – 69%

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

Figure 3. Water Year Runoff in Percent of Average
1987 to 1990
by Hydrologic Region



STATEWIDE

1987 WATER YEAR – 48%
1988 WATER YEAR – 48%
1989 WATER YEAR – 72%
1990 WATER YEAR – 45%

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

*CR Runoff is inflow to Lake Powell

Population

California's population continued to grow at a fast pace in the 1980s. On April 1, 1990, the United States census showed California's population at 29,760,000, an increase of 6,092,000 from the last census in 1980. California grew 25.7 percent over this period, whereas the United States grew only 9.4 percent. As a percentage of total U.S. population, California grew from 10.4 percent in 1980 to 12.0 percent in 1990. In 1940, California population was only 6,908,000, about 5 percent of the U.S. total. The U.S. census data for California from 1940 to 1990 is shown (by county) in Table 2.

The U.S. census attempts to count each and every person living within a census block. Despite the effort, there are people who do not get counted. No adjustments have been made to the official census data to correct for any undercount of the actual population.

The *California Department of Finance estimates population every January and July in between the official* U.S. census surveys. On July 1, 1990, the estimate was 29,976,000, an increase of 216,000 from the April 1 census. The state is continuing its rapid growth of the 1980s. High in-migration and increased births contributed to the increase. (See Figure 4.) July 1, 1990 population data are shown by county in Table 3 and by planning subarea in Table 4.

Figure 4. Population Rates

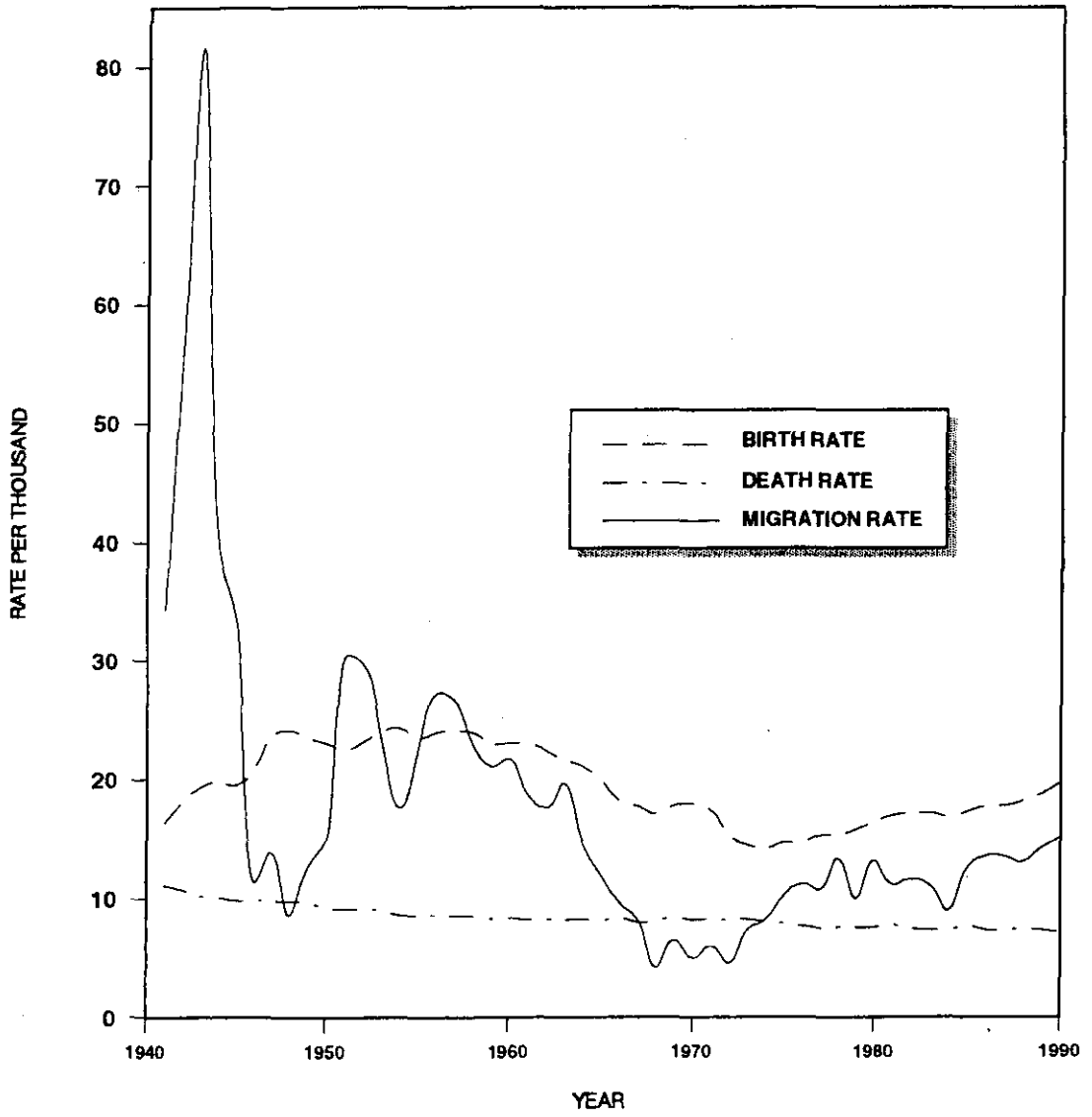


Table 2. Population by County, 1940 to 1990

U.S. Census Data

	Apr 1940	Apr 1950	Apr 1960	Apr 1970	Apr 1980	Apr 1990
Alameda	513,011	740,315	908,209	1,071,446	1,105,379	1,279,182
Alpine	323	241	397	484	1,097	1,113
Amador	8,973	9,151	9,990	11,821	19,314	30,039
Butte	42,840	64,930	82,030	101,969	143,851	182,120
Calaveras	8,221	9,902	10,289	13,585	20,710	31,998
Colusa	9,788	11,651	12,075	12,430	12,791	16,275
Contra Costa	100,450	298,984	409,030	556,116	656,380	803,732
Del Norte	4,745	8,078	17,771	14,580	18,217	23,460
El Dorado	13,229	16,207	29,390	43,833	85,812	125,995
Fresno	178,565	276,515	365,945	413,329	514,229	667,490
Glenn	12,195	15,448	17,245	17,521	21,350	24,798
Humboldt	45,812	69,241	104,892	99,692	108,514	119,118
Imperial	59,740	62,975	72,105	74,492	92,110	109,303
Inyo	7,625	11,658	11,684	15,571	17,895	18,281
Kern	135,124	228,309	291,984	330,234	403,089	543,477
Kings	35,168	46,768	49,954	66,717	73,738	101,469
Lake	8,069	11,481	13,786	19,548	36,366	50,631
Lassen	14,479	18,474	13,597	16,796	21,661	27,598
Los Angeles	2,785,643	4,151,687	6,038,771	7,041,980	7,477,503	8,863,164
Madera	23,314	36,964	40,468	41,519	63,116	88,090
Marin	52,907	85,619	146,820	208,652	222,592	230,096
Mariposa	5,605	5,145	5,064	6,015	11,108	14,302
Mendocino	27,864	40,854	51,059	51,101	66,738	80,345
Merced	46,988	69,780	90,446	104,629	134,558	178,403
Modoc	8,713	9,678	8,308	7,469	8,610	9,678
Mono	2,299	2,115	2,213	4,016	8,577	9,956
Monterey	73,032	130,498	198,351	247,450	290,444	355,660
Napa	28,503	46,603	65,890	79,140	99,199	110,765
Nevada	19,283	19,888	20,911	26,346	51,645	78,510
Orange	130,760	216,224	703,925	1,421,233	1,932,709	2,410,556
Placer	28,108	41,649	56,998	77,632	117,247	172,796
Plumas	11,548	13,519	11,620	11,707	17,340	19,739
Riverside	105,524	170,046	306,191	456,916	663,199	1,170,413
Sacramento	170,333	277,140	502,778	634,373	783,381	1,041,219
San Benito	11,392	14,370	15,396	18,226	25,005	36,697

Population by County, 1940 to 1990 (continued)

U.S. Census Data

	Apr 1940	Apr 1950	Apr 1960	Apr 1970	Apr 1980	Apr 1990
San Bernardino	161,108	281,642	503,591	682,233	895,016	1,418,380
San Diego	289,348	556,808	1,033,011	1,357,854	1,861,846	2,498,016
San Francisco	634,536	775,357	740,316	715,674	678,974	723,959
San Joaquin	134,207	200,750	249,989	291,073	347,342	480,628
San Luis Obispo	33,246	51,417	81,044	105,690	155,435	217,162
San Mateo	111,782	235,659	444,387	557,361	587,329	649,623
Santa Barbara	70,555	98,220	168,962	264,324	298,694	369,608
Santa Clara	174,949	290,547	642,315	1,065,313	1,295,071	1,497,577
Santa Cruz	45,057	66,534	84,219	123,790	188,141	229,734
Shasta	28,800	36,413	59,468	77,640	115,715	147,036
Sierra	3,025	2,410	2,247	2,365	3,073	3,318
Siskiyou	28,598	30,733	32,885	33,225	39,732	43,531
Solano	49,118	104,833	134,597	171,989	235,203	340,421
Sonoma	69,052	103,405	147,375	204,885	299,681	388,222
Stanislaus	74,866	127,231	157,294	194,506	265,900	370,522
Sutter	18,680	26,239	33,380	41,935	52,246	64,415
Tehama	14,316	19,276	25,305	29,517	38,888	49,625
Trinity	3,970	5,087	9,706	7,615	11,858	13,063
Tulare	107,152	149,264	168,403	188,322	245,738	311,921
Tuolumne	10,887	12,584	14,404	22,169	33,928	48,456
Ventura	69,685	114,647	199,138	378,497	529,174	669,016
Yolo	27,243	40,640	65,727	91,788	113,374	141,092
Yuba	17,034	24,420	33,859	44,736	49,733	58,228
Total	**6,907,387**	**10,586,223**	**15,717,204**	**19,971,069**	**23,667,565**	**29,760,021**

Table 3. Population by County, Ranked by 1989–90 Change
Department of Finance Data

	Jul 1989	Jul 1990	1989–90 Change	Percent Increase
Los Angeles	8,768,700	8,897,500	128,800	1.4
Riverside	1,096,500	1,195,400	98,900	8.3
San Bernardino	1,353,000	1,440,700	87,700	6.1
San Diego	2,432,800	2,520,500	87,700	3.5
Orange	2,372,400	2,424,100	51,700	2.1
Sacramento	1,011,800	1,051,400	39,600	3.8
Contra Costa	785,000	810,300	25,300	3.1
Fresno	649,000	673,900	24,900	3.7
Kern	525,100	549,800	24,700	4.5
Stanislaus	354,200	376,100	21,900	5.8
Solano	325,200	345,700	20,500	5.9
Santa Clara	1,485,400	1,502,200	16,800	1.1
Sonoma	377,200	392,000	14,800	3.8
San Joaquin	471,500	483,800	12,300	2.5
Monterey	346,600	358,800	12,200	3.4
Alameda	1,271,000	1,282,400	11,400	0.9
Placer	164,600	175,600	11,000	6.3
Tulare	304,000	314,600	10,600	3.4
Ventura	662,000	671,600	9,600	1.4
San Mateo	642,600	652,100	9,500	1.5
San Luis Obispo	210,500	219,500	9,000	4.1
Merced	172,000	180,600	8,600	4.8
El Dorado	119,700	128,200	8,500	6.6
Butte	176,900	183,900	7,000	3.8
Shasta	141,800	148,800	7,000	4.7
Madera	83,000	89,800	6,800	7.6
Santa Barbara	364,700	371,400	6,700	1.8
Yolo	137,100	142,500	5,400	3.8
Imperial	106,100	110,400	4,300	3.9
Nevada	75,300	79,600	4,300	5.4
Kings	98,300	102,500	4,200	4.1
Marin	227,000	231,200	4,200	1.8
Del Norte	20,400	24,500	4,100	16.7
Napa	108,100	111,700	3,600	3.2
Santa Cruz	227,700	230,800	3,100	1.3

Population by County, Ranked by 1989–90 Change (continued)

Department of Finance Data

	Jul 1989	Jul 1990	1989–90 Change	Percent Increase
Humboldt	117,000	119,800	2,800	2.3
Sutter	62,400	65,100	2,700	4.1
Mendocino	78,500	81,000	2,500	3.1
Amador	28,300	30,600	2,300	7.5
Tehama	48,000	50,100	2,100	4.2
Tuolumne	47,000	49,000	2,000	4.1
Yuba	56,700	58,700	2,000	3.4
Calaveras	30,600	32,500	1,900	5.8
Lake	49,200	51,100	1,900	3.7
San Benito	35,900	37,000	1,100	3.0
Siskiyou	42,800	43,800	1,000	2.3
Lassen	26,900	27,800	900	3.2
Mariposa	13,600	14,500	900	6.2
Mono	9,300	10,200	900	8.8
Glenn	24,200	25,000	800	3.2
Plumas	19,300	19,900	600	3.0
Colusa	15,900	16,400	500	3.0
Inyo	18,000	18,400	400	2.2
Modoc	9,400	9,700	300	3.1
Sierra	3,200	3,400	200	5.9
Trinity	13,000	13,100	100	0.8
Alpine	1,100	1,100	0	0.0
San Francisco	724,500	723,900	−600	−0.1
Total	**29,142,000**	**29,976,000**	**834,000**	**2.8**

Table 4. Population by Planning Subarea

Region/PSA	Apr 1960	Apr 1970	Apr 1980	Jul 1990
North Coast Region				
Upper Klamath	20,366	21,378	25,327	29,175
Lower Klamath–Smith	35,149	29,919	38,565	46,115
Coastal	129,015	123,019	141,789	159,755
Russian River	133,004	175,813	259,889	336,705
Region Total	**317,534**	**350,129**	**465,570**	**571,750**
San Francisco Bay Region				
North Bay	356,922	475,510	562,054	680,025
South Bay	3,103,308	3,899,602	4,212,132	4,803,725
Region Total	**3,460,230**	**4,375,112**	**4,774,186**	**5,483,750**
Central Coast Region				
Northern	316,897	419,099	557,867	701,735
Southern	250,156	370,164	454,329	591,125
Region Total	**567,053**	**789,263**	**1,012,196**	**1,292,860**
South Coast Region				
Santa Clara	220,088	433,497	612,843	833,975
Metropolitan	5,955,051	6,909,378	7,293,549	8,500,800
Santa Ana	1,313,094	2,227,473	2,925,425	4,022,800
San Diego	1,060,698	1,442,676	2,072,593	2,935,200
Region Total	**8,548,931**	**11,013,024**	**12,904,410**	**16,292,775**
Sacramento River Region				
Shasta Lake–Pit River	21,977	21,615	28,490	31,125
Northwest Valley	61,531	70,097	90,044	110,135
Northeast Valley	60,202	86,355	138,887	186,455
Southeast	94,497	111,085	179,950	249,475
Central Basin West	90,578	124,947	175,854	241,900
Central Basin East	613,245	776,844	957,943	1,267,210
Southwest	14,209	20,261	37,252	52,700
Delta Service Area	32,789	36,827	42,380	66,050
Region Total	**989,028**	**1,248,031**	**1,650,800**	**2,205,050**
San Joaquin River Region				
Sierra Foothills	36,174	51,108	90,720	143,630
Easten Valley Floor	156,533	175,682	201,596	311,860
Delta Service Area	83,237	100,531	128,353	156,350
Western Uplands	11,077	24,122	38,799	64,240
East Side Uplands	12,639	15,347	31,813	43,745
Valley East Side	284,238	340,174	466,217	653,320
Valley West Side	36,316	40,594	45,328	60,725
West Side Uplands	25	25	25	35
Region Total	**620,239**	**747,583**	**1,002,851**	**1,433,905**

Population by Planning Subarea (continued)

Region/PSA	Apr 1960	Apr 1970	Apr 1980	Jul 1990
Tulare Lake Region				
Upland	14,270	18,612	32,497	54,665
Kings–Kaweah–Tule Rivers	547,009	624,513	780,617	1,021,580
San Luis West Side	20,988	27,688	27,830	38,945
Western Uplands	3,438	3,345	4,096	7,105
Kern Valley Floor	243,357	269,716	326,037	431,495
Region Total	**829,062**	**943,874**	**1,171,077**	**1,553,790**
North Lahontan Region				
Lassen Group	12,412	14,972	18,771	24,740
Alpine Group	14,609	25,422	45,188	53,405
Region Total	**27,021**	**40,394**	**63,959**	**78,145**
South Lahontan Region				
Mono–Owens Area	12,029	17,168	23,129	25,465
Death Valley	1,085	1,292	1,633	1,050
Indian Wells Area	23,219	29,123	34,074	47,660
Antelope Valley	79,640	97,832	121,128	260,400
Mojave River	59,746	89,505	128,066	265,235
Region Total	**175,719**	**234,920**	**308,030**	**599,810**
Colorado River Region				
Twentynine Palms–Lanfair	19,346	26,388	42,213	60,485
Chuckwalla	1,864	3,322	3,249	2,400
Colorado River	22,356	22,013	24,009	27,715
Coachella	67,714	103,553	153,036	263,100
Borrego	2,516	2,736	4,492	6,175
Imperial Valley	68,591	70,727	87,487	104,290
Region Total	**182,387**	**228,739**	**314,486**	**464,165**
Statewide Total	**15,717,204**	**19,971,069**	**23,667,565**	**29,976,000**

Land Use

California's total irrigated acreage in 1990 was 9.0 million acres (about the same acreage as 1989). Significant crop changes from the year before were that grains decreased by about 130,000 acres; this was offset by small increases in several other crops. During 1990, the fourth straight year of below normal rainfall and deficient surface water supplies in many areas, ground water supplies made up for surface water deficiencies in most agricultural areas. Agricultural crop acreage was slightly less than in years with normal water supplies.

Counties that DWR surveyed in 1990 (using aerial photographs, field identification, and then either cut–and–weigh or computer digitizing) were: Kern, Lassen, Modoc, Santa Clara, Shasta, and Sutter.

Agricultural price support programs, conservation reserve programs, marketing orders, and international trade restrictions by the federal government affect irrigated acreage in California, but the impacts are difficult to determine. Price support programs that require farmers to idle irrigated acreage may tend to reduce California's planted acreage. On the other hand, subsidy programs that make crops profitable, especially those that otherwise might not have been planted, may tend to increase planted acreage. Tabulated below are the government payments from price support programs to California farmers and to all U.S. farmers for the last nine years. California ranked number one in gross agricultural receipts (11 percent of U.S. receipts) but received less than three percent of federal payments to farmers.

Table 5. Government Payments to California Farmers

(1,000 dollars)

	Feed Grains	Wheat	Rice	Cotton	Wool	Conservation	Miscellaneous	Total
1982	4,280	9,524	23,679	86,731	4,190	4,869	1,210	134,483
1983	4,787	12,433	52,281	71,729	6,730	4,371	200,275	352,606
1984	2,688	19,040	29,016	27,023	9,717	7,717	240,058	335,259
1985	5,295	21,711	121,362	99,972	8,091	5,325	39,131	300,887
1986	17,324	43,441	82,272	119,602	9,476	4,990	110,756	387,861
1987	36,397	60,250	87,589	168,103	8,295	10,866	90,511	462,011
1988	28,464	40,237	87,435	118,600	6,949	12,879	40,514	335,078
1989	10,331	10,426	124,811	148,324	3,203	13,684	61,311	372,090
1990	6,340	27,752	92,150	57,995	4,463	14,452	49,181	252,333

Source: *Economic Indicators of the Farm Sector, State Financial Summary,* U.S. Dept of Agriculture, Economic Research Unit.

Table 6. Government Payments to U.S. Farmers

(1,000 dollars)

	Feed Grains	Wheat	Rice	Cotton	Wool	Conservation	Miscellaneous	Total
1982	713,315	652,268	155,910	800,211	46,042	176,668	945,551	3,489,965
1983	1,346,033	864,179	277,627	662,289	83,550	187,532	5,873,889	9,295,099
1984	366,739	1,795,151	191,783	274,658	117,578	191,458	5,493,003	8,430,370
1985	2,860,552	1,949,621	577,234	1,106,244	97,596	188,830	924,077	7,704,154
1986	5,158,038	3,499,721	422,769	1,042,392	119,922	253,697	1,324,812	11,821,351
1987	8,489,993	2,931,266	474,853	1,204,298	143,724	1,530,927	1,971,671	16,746,732
1988	7,219,460	1,841,883	464,548	923,863	116,777	1,607,379	2,305,898	14,479,808
1989	3,140,796	602,997	670,982	1,183,316	81,403	1,770,664	3,436,044	10,886,202
1990	2,701,173	2,311,300	464,880	440,757	96,195	1,898,141	1,385,584	9,298,030

Source: *Economic Indicators of the Farm Sector, State Financial Summary,* U.S. Dept of Agriculture, Economic Research Unit.

Table 7. 1990 Regional Crop Acreage by Planning Subarea

(1,000 acres)

North Coast Region

	Upper Klamath	Lower Klamath	Coastal	Russian River	NC Total
Grain	74.9	0.3	0.5	0.0	75.7
Rice	0.0	0.0	0.0	0.0	0.0
Cotton	0.0	0.0	0.0	0.0	0.0
Sugar Beets	0.6	0.0	0.0	0.0	0.6
Corn	0.5	0.1	0.1	0.3	1.0
Other Field	0.7	0.1	0.5	3.2	4.5
Alfalfa	51.2	0.7	0.7	0.0	52.6
Pasture	72.5	10.6	24.4	10.8	118.3
Tomatoes	0.0	0.0	0.0	0.0	0.0
Other Truck	18.9	0.8	1.7	0.6	22.0
Almond–Pistachio	0.0	0.0	0.0	0.0	0.0
Other Deciduous	0.0	0.0	1.2	9.9	11.1
Citrus–Olive	0.0	0.0	0.0	0.0	0.0
Grapes	0.0	0.0	1.0	37.7	38.7
Total Crop Acres	219.3	12.6	30.1	62.5	324.5
Double Crop	0.0	0.0	0.0	0.0	0.0
Total Acres	219.3	12.6	30.1	62.5	324.5

San Francisco Bay Region

	North Bay	South Bay	SF Total
Grain	0.5	1.6	2.1
Rice	0.0	0.0	0.0
Cotton	0.0	0.0	0.0
Sugar Beets	0.2	0.0	0.2
Corn	0.3	0.3	0.6
Other Field	0.4	0.8	1.2
Alfalfa	0.0	0.2	0.2
Pasture	4.1	0.6	4.7
Tomatoes	0.3	0.0	0.3
Other Truck	1.0	7.4	8.4
Almond–Pistachio	0.0	0.0	0.0
Other Deciduous	4.1	2.1	6.2
Citrus–Olive	0.0	0.0	0.0
Grapes	35.0	1.7	36.7
Total Crop Acres	45.9	14.7	60.6
Double Crop	0.0	0.2	0.2
Total Acres	45.9	14.5	60.4

1990 Regional Crop Acreage by Planning Subarea (continued)

(1,000 acres)

Central Coast Region

	Southern	Northern	CC Total
Grain	4.4	23.2	27.6
Rice	0.0	0.0	0.0
Cotton	0.0	0.0	0.0
Sugar Beets	0.0	4.5	4.5
Corn	1.4	1.8	3.2
Other Field	7.7	8.4	16.1
Alfalfa	19.4	7.3	26.6
Pasture	12.8	7.5	20.3
Tomatoes	0.5	13.6	14.1
Other Truck	95.4	225.1	320.5
Almond–Pistachio	0.0	0.0	0.0
Other Deciduous	2.2	17.7	19.9
Citrus–Olive	17.7	0.2	17.9
Grapes	20.3	35.9	56.2
Total Crop Acres	181.7	345.2	526.9
Double Crop	36.6	61.5	98.1
Total Acres	**145.1**	**283.7**	**428.8**

South Coast Region

	Santa Clara	Metro LA	Santa Ana	San Diego	SC Total
Grain	0.1	0.1	3.6	6.8	10.6
Rice	0.0	0.0	0.0	0.0	0.0
Cotton	0.0	0.0	0.0	0.0	0.0
Sugar Beets	0.0	0.0	0.0	0.0	0.0
Corn	1.4	0.3	2.5	0.3	4.6
Other Field	0.4	0.0	3.7	0.1	4.3
Alfalfa	0.2	0.0	8.6	0.5	9.4
Pasture	2.3	0.3	12.1	5.1	19.7
Tomatoes	4.4	0.0	1.2	3.2	8.8
Other Truck	48.1	4.2	21.3	13.4	87.0
Almond–Pistachio	0.0	0.0	0.0	0.0	0.0
Other Deciduous	0.3	0.0	1.1	1.8	3.3
Citrus–Olive	59.2	2.2	25.4	75.7	162.4
Grapes	0.0	0.0	3.8	2.4	6.3
Total Crop Acres	116.6	7.1	83.2	109.4	316.3
Double Crop	21.6	0.0	6.5	2.3	30.4
Total Acres	**94.9**	**7.1**	**76.7**	**107.1**	**285.8**

1990 Regional Crop Acreage by Planning Subarea (continued)

(1,000 acres)

Sacramento River Region

	Shasta Pit	Northwest Valley	Northeast Valley	Southeast	Central Basin W	Central Basin E	South-west	Delta	SR Total
Grain	11.5	13.5	7.3	1.7	159.6	65.5	0.6	41.0	300.7
Rice	2.4	1.6	0.0	0.6	165.5	251.0	0.6	0.9	422.6
Cotton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sugar Beets	0.0	1.5	1.2	0.0	31.7	10.2	0.0	9.6	54.2
Corn	0.0	3.1	2.4	0.0	33.4	12.2	0.0	36.0	87.1
Other Field	0.2	3.4	4.3	0.0	68.4	48.9	0.1	23.3	148.6
Alfalfa	37.3	7.7	1.4	6.5	69.8	13.6	0.3	14.3	150.9
Pasture	88.9	46.1	21.1	88.0	25.9	49.9	4.4	15.8	335.1
Tomatoes	0.0	0.0	0.0	0.2	90.6	23.5	0.0	18.6	132.9
Other Truck	1.1	0.9	0.5	0.5	39.8	16.2	0.1	3.9	62.5
Almond–Pistachio	0.0	12.9	20.2	0.1	35.5	30.4	0.1	0.0	99.2
Other Deciduous	0.1	17.6	24.1	2.9	33.3	112.2	8.0	7.2	205.4
Citrus–Olive	0.0	14.7	0.5	2.1	1.5	3.4	0.0	0.0	22.2
Grapes	0.0	0.1	0.5	0.7	4.6	0.4	4.8	4.3	15.4
Total Crop Acres	141.5	123.1	83.5	98.3	759.1	637.4	19.0	174.9	2,036.8
Double Crop	0.0	0.6	0.0	0.0	26.8	11.3	0.0	4.8	43.5
Total Acres	**141.5**	**122.5**	**83.5**	**98.3**	**732.3**	**626.1**	**19.0**	**170.1**	**1,993.3**

San Joaquin River Region

	Sierra Foot	E Vly Floor	Delta	West Uplands	E Side-Uplands	Vly E Side	Vly W Side	W Side Uplands	SJ Total
Grain	0.0	28.9	38.0	0.6	0.0	79.6	18.2		165.3
Rice	0.0	4.9	0.0	0.0	0.0	9.3	6.9		21.1
Cotton	0.0	0.0	0.0	0.0	0.0	68.0	107.9		175.9
Sugar Beets	0.0	12.5	15.6	0.1	0.0	6.9	20.1		55.2
Corn	0.0	21.8	48.4	0.1	0.0	95.3	15.5		181.1
Other Field	0.0	14.4	26.9	1.9	0.7	26.0	34.7		104.6
Alfalfa	0.0	15.1	44.7	3.7	0.0	99.3	61.0		223.8
Pasture	4.0	48.5	12.0	0.8	1.2	149.8	20.7		237.0
Tomatoes	0.0	13.2	25.5	0.2	0.0	8.6	40.3		87.8
Other Truck	0.0	10.2	26.3	0.3	0.0	20.9	72.5		130.2
Almond–Pistachio	0.0	3.0	2.8	1.7	0.0	223.5	13.6		244.6
Other Deciduous	3.0	41.1	11.1	2.2	0.4	67.8	23.0		148.6
Citrus–Olive	0.0	0.0	0.0	0.0	0.0	8.7	0.2		8.9
Grapes	1.9	56.7	1.5	0.7	0.0	122.4	0.7		183.9
Total Crop Acres	8.9	270.3	252.8	12.3	2.3	986.1	435.3	0.0	1,968.0
Double Crop	0.0	4.5	5.6	0.0	0.0	37.5	5.8		53.4
Total Acres	**8.9**	**265.8**	**247.2**	**12.3**	**2.3**	**948.6**	**429.5**	**0.0**	**1,914.6**

1990 Regional Crop Acreage by Planning Subarea (continued)

(1,000 acres)

Tulare Lake Region

	Kern Valley	KKT	San Luis W Side	Uplands	TL TOTAL
Grain	52.5	159.6	69.0	0.0	281.1
Rice	0.5	0.2	0.0	0.0	0.7
Cotton	303.8	442.7	260.9	0.0	1,007.4
Sugar Beets	19.7	6.9	8.0	0.0	34.6
Corn	7.7	102.3	0.7	0.0	110.7
Other Field	22.2	63.6	22.8	0.1	108.7
Alfalfa	104.1	227.9	24.5	1.0	357.5
Pasture	4.2	33.6	1.2	3.8	42.8
Tomatoes	4.5	2.1	96.6	0.0	103.2
Other Truck	74.3	26.6	70.0	0.1	170.9
Almond–Pistachio	103.8	44.5	15.8	0.0	164.1
Other Deciduous	16.5	154.4	2.2	1.5	174.6
Citrus–Olive	49.8	132.6	1.7	1.7	185.8
Grapes	86.6	299.9	5.9	0.0	392.4
Total Crop Acres	850.2	1,696.8	579.3	8.2	3,134.5
Double Crop	22.0	27.2	5.1	0.0	54.3
Total Acres	828.2	1,669.6	574.2	8.2	3,080.2

North Lahontan Region

	Lassen Group	Alpine Group	NL Total
Grain	6.4	0.0	6.4
Rice	0.5	0.0	0.5
Cotton	0.0	0.0	0.0
Sugar Beets	0.0	0.0	0.0
Corn	0.3	0.0	0.3
Other Field	0.0	0.0	0.0
Alfalfa	39.3	3.4	42.7
Pasture	70.1	37.4	107.5
Tomatoes	0.0	0.0	0.0
Other Truck	1.2	0.0	1.2
Almond–Pistachio	0.0	0.0	0.0
Other Deciduous	0.0	0.0	0.0
Citrus–Olive	0.0	0.0	0.0
Grapes	0.0	0.0	0.0
Total Crop Acres	117.8	40.8	158.6
Double Crop			0.0
Total Acres	117.8	40.8	158.6

1990 Regional Crop Acreage by Planning Subarea (continued)

(1,000 acres)

South Lahontan Region

	Mono Owens	Death Valley	Indian Wells	Antelope Valley	Mojave River	SL Total
Grain	0.0	0.0	0.0	0.2	0.2	0.5
Rice	0.0	0.0	0.0	0.0	0.0	0.0
Cotton	0.0	0.0	0.0	0.0	0.0	0.0
Sugar Beets	0.0	0.0	0.0	0.0	0.0	0.0
Corn	0.0	0.0	0.0	0.1	0.0	0.1
Other Field	0.1	0.0	0.0	0.0	0.8	0.9
Alfalfa	11.3	1.6	2.7	6.2	12.3	34.1
Pasture	16.6	0.1	0.1	0.3	1.2	18.3
Tomatoes	0.0	0.0	0.0	0.0	0.0	0.0
Other Truck	0.0	0.0	0.0	2.1	0.1	2.2
Almond–Pistachio	0.0	0.0	0.0	0.0	0.0	0.0
Other Deciduous	0.0	0.1	0.6	2.1	0.6	3.4
Citrus–Olive	0.0	0.0	0.0	0.0	0.0	0.0
Grapes	0.0	0.0	0.1	0.0	0.0	0.1
Total Crop Acres	28.1	1.9	3.5	11.0	15.1	59.6
Double Crop	0.0	0.0	0.0	0.0	0.0	0.0
Total Acres	28.1	1.9	3.5	11.0	15.1	59.6

Colorado River Region

	29 Palms	Chuckwalla	Colorado River	Coachella	Borrego	Imperial	CR Total
Grain	0.0	0.0	11.2	0.9	0.1	63.8	76.2
Rice	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cotton	0.0	0.0	25.3	0.3	0.0	11.0	36.6
Sugar Beets	0.0	0.0	0.0	0.0	0.0	35.4	35.4
Corn	0.0	0.0	0.4	5.9	0.2	1.8	8.4
Other Field	0.1	4.4	5.7	1.9	0.0	42.6	54.7
Alfalfa	3.3	0.0	52.5	2.5	2.3	195.3	255.9
Pasture	0.0	0.0	4.4	1.2	0.0	26.2	31.8
Tomatoes	0.0	0.0	1.7	0.3	0.3	10.8	13.2
Other Truck	0.0	1.0	25.1	19.5	4.6	136.6	186.9
Almond–Pistachio	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other Deciduous	0.1	0.0	0.0	0.4	0.1	0.7	1.3
Citrus–Olive	0.1	0.0	4.0	21.3	1.9	1.7	29.0
Grapes	0.8	0.0	0.0	19.3	0.0	0.0	20.1
Total Crop Acres	4.3	5.5	130.3	73.6	9.7	526.0	749.5
Double Crop	0.0	0.0	24.8	13.2	1.4	63.0	102.4
Total Acres	4.3	5.5	105.5	60.5	8.3	463.0	647.1

Table 8. 1990 Statewide Crop Acreage by Region

(1,000 acres)

	NC	SF	CC	SC	SR	SJ	TL	NL	SL	CR	CA Total
Grain	75.7	2.1	27.6	10.6	300.7	165.3	281.1	6.4	0.5	76.2	946.1
Rice	0.0	0.0	0.0	0.0	422.6	21.1	0.7	0.5	0.0	0.0	444.9
Cotton	0.0	0.0	0.0	0.0	0.0	175.9	1,007.4	0.0	0.0	36.6	1,219.9
Sugar Beets	0.6	0.2	4.5	0.0	54.2	55.2	34.6	0.0	0.0	35.4	184.7
Corn	1.0	0.6	3.2	4.6	87.1	181.1	110.7	0.3	0.1	8.4	397.0
Other Field	4.5	1.2	16.1	4.3	148.6	104.6	108.7	0.0	0.9	54.7	443.6
Alfalfa	52.6	0.2	26.6	9.4	150.9	223.8	357.5	42.7	34.1	255.9	1,153.8
Pasture	118.3	4.7	20.3	19.7	335.1	237.0	42.8	107.5	18.3	31.8	935.6
Tomatoes	0.0	0.3	14.1	8.8	132.9	87.8	103.2	0.0	0.0	13.2	360.2
Other Truck	22.0	8.4	320.5	87.0	62.5	130.2	170.9	1.2	2.2	186.9	991.8
Almond–Pistachio	0.0	0.0	0.0	0.0	99.2	244.6	164.1	0.0	0.0	0.0	507.9
Other Deciduous	11.1	6.2	19.9	3.3	205.4	148.6	174.6	0.0	3.4	1.3	573.8
Citrus–Olive	0.0	0.0	17.9	162.4	22.2	8.9	185.8	0.0	0.0	29.0	426.3
Grapes	38.7	36.7	56.2	6.3	15.4	183.9	392.4	0.0	0.1	20.1	749.7
Total Crop Acres	324.5	60.6	526.9	316.3	2,036.8	1,968.0	3,134.5	158.6	59.6	749.5	9,335.2
Double Crop	0.0	0.2	98.1	30.4	43.5	53.4	54.3	0.0	0.0	102.4	382.3
Total	**324.5**	**60.4**	**428.8**	**285.8**	**1,993.3**	**1,914.6**	**3,080.2**	**158.6**	**59.6**	**647.1**	**8,952.9**

Table 9. 1990 Crop Acreage by County

(1,000 acres)

	Grain	Rice	Cotton	Beets	Corn	Other Field	Alfalfa	Pasture	Tomato	Other Truck	Almonds/ Pistach.	Other Decid	Citrus–Olive	Vine	Total
Alameda	0.5	0.0	0.0	0.0	0.0	0.6	1.8	0.2	0.0	1.0	0.0	0.1	0.0	1.6	5.8
Alpine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.3	0.0	0.0	0.0	0.0	0.0	0.0	6.3
Amador	0.3	0.0	0.0	0.0	0.1	0.4	0.2	1.7	0.0	0.1	0.0	0.5	0.0	1.6	4.9
Butte	17.4	88.1	0.0	2.1	2.1	9.5	5.5	11.3	0.0	0.8	40.4	33.7	6.0	0.2	217.1
Calaveras	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.6	0.0	0.0	0.0	0.7	0.0	0.1	1.5
Colusa	41.6	96.0	0.0	10.0	1.8	22.1	15.0	4.8	20.5	21.3	19.0	10.8	0.3	1.6	264.8
Contra Costa	4.5	0.0	0.0	0.0	6.5	3.0	2.8	6.2	4.8	2.9	0.1	5.1	0.0	0.8	36.7
Del Norte	0.2	0.0	0.0	0.0	0.0	0.0	0.0	5.9	0.0	0.8	0.0	0.0	0.0	0.0	6.9
El Dorado	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.1	0.0	2.4	0.0	0.7	6.2
Fresno	69.1	6.2	362.1	20.0	17.6	29.5	119.1	24.6	107.0	99.9	36.4	64.4	26.7	231.5	1,214.1
Glenn	40.1	73.0	0.0	10.2	8.8	11.7	16.9	24.7	0.0	3.4	14.9	14.2	4.9	1.4	224.2
Humboldt	0.1	0.0	0.0	0.0	0.1	0.2	0.5	20.7	0.0	1.3	0.0	0.1	0.0	0.0	23.0
Imperial	67.0	0.0	14.2	35.4	2.1	45.6	203.0	27.3	11.9	151.8	0.0	0.8	4.7	0.0	563.8
Inyo	0.0	0.0	0.0	0.0	0.0	0.1	4.3	7.3	0.0	0.0	0.0	0.0	0.0	0.0	11.8
Kern	50.1	0.5	305.0	19.7	7.7	22.6	110.3	5.9	4.7	75.8	103.8	18.3	44.8	86.7	855.9
Kings	88.5	0.0	261.8	0.6	20.1	40.5	61.1	5.3	4.9	6.2	9.9	15.2	1.6	4.4	520.1
Lake	0.4	0.6	0.0	0.0	0.0	0.1	0.3	4.0	0.0	0.1	0.1	7.9	0.0	2.8	16.3
Lassen	7.9	0.7	0.0	0.0	0.3	0.0	34.9	67.8	0.0	1.4	0.0	0.0	0.0	0.0	113.0
Los Angeles	0.2	0.0	0.0	0.0	0.4	0.0	4.0	0.5	0.0	5.9	0.0	1.8	2.2	0.0	15.0
Madera	25.0	0.0	46.0	2.1	12.0	5.6	33.0	13.3	0.0	4.1	54.0	15.4	8.1	83.3	301.9
Marin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.2	0.0	0.0	0.0	0.0	1.0
Mariposa	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.8	0.0	0.0	0.0	0.2	0.0	0.0	1.7
Mendocino	0.4	0.0	0.0	0.0	0.0	0.4	0.2	6.9	0.0	0.4	0.0	4.4	0.0	12.5	25.2
Merced	41.5	5.3	69.4	12.3	51.3	16.0	72.7	69.0	15.2	27.5	73.1	24.1	0.2	17.5	495.1
Modoc	27.4	0.9	0.0	0.6	0.0	0.0	42.0	87.6	0.0	8.5	0.0	0.0	0.0	0.0	166.4
Mono	0.0	0.0	0.0	0.0	0.0	0.0	10.9	40.2	0.0	0.0	0.0	0.0	0.0	0.0	51.0
Monterey	5.5	0.0	0.0	2.7	0.4	6.8	3.7	3.7	7.7	192.3	0.0	1.1	0.1	33.2	257.2

1990 Crop Acreage by County (continued)

(1,000 acres)

	Grain	Rice	Cotton	Beets	Corn	Other Field	Alfalfa	Pasture	Tomato	Other Truck	Al–Pist	Other Decid	Citrus–Olive	Vine	Total
Napa	0.2	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.3	0.0	0.3	0.0	28.9	30.8
Nevada	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.2	0.2	0.0	0.0	0.3	0.0	0.1	7.8
Orange	0.0	0.0	0.0	0.0	0.5	0.5	0.0	0.4	1.2	11.3	0.0	0.0	4.5	0.0	18.5
Placer	1.9	12.2	0.0	0.0	0.0	0.8	0.0	26.9	0.0	0.0	0.0	3.7	0.0	0.2	45.7
Plumas	1.2	0.0	0.0	0.0	0.0	0.0	5.6	31.8	0.0	0.3	0.0	0.0	0.0	0.0	38.9
Riverside	16.9	0.0	21.6	0.0	7.2	10.4	56.1	13.2	1.3	44.4	0.0	1.2	50.0	22.0	244.3
Sacramento	29.9	10.1	0.0	6.6	31.6	9.4	7.9	34.4	7.8	2.7	0.0	7.6	0.0	6.4	153.4
San Benito	12.5	0.0	0.0	1.0	0.2	0.8	3.2	1.9	3.1	12.0	0.0	7.9	0.0	1.7	44.3
San Bernardino	2.8	0.0	0.8	0.0	1.0	2.7	19.1	6.2	0.0	1.7	0.0	1.3	6.1	4.1	45.6
San Diego	0.1	0.0	0.0	0.0	0.4	0.1	0.3	3.2	3.2	12.4	0.0	1.6	64.8	0.2	86.3
San Joaquin	59.5	5.0	0.0	27.9	62.8	40.4	63.1	48.4	34.2	36.5	42.0	55.4	0.0	59.2	534.4
San Luis Obispo	1.5	0.0	0.0	0.0	0.2	1.4	13.6	6.1	0.2	33.3	0.0	1.1	2.4	9.8	69.6
San Mateo	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.3	0.0	4.9	0.0	0.0	0.0	0.0	5.3
Santa Barbara	2.9	0.0	0.0	0.0	1.3	6.3	5.1	6.6	0.2	62.1	0.0	1.1	14.1	10.5	110.0
Santa Clara	6.5	0.0	0.0	0.8	1.5	1.2	0.8	1.1	2.8	8.4	0.0	5.1	0.0	1.0	29.0
Santa Cruz	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.9	0.0	13.9	0.0	5.6	0.1	0.1	20.7
Shasta	5.9	1.3	0.0	0.0	0.1	0.4	8.3	37.8	0.0	1.5	0.2	1.9	0.8	0.2	57.9
Sierra	0.3	0.0	0.0	0.0	0.0	0.0	0.9	13.2	0.0	0.1	0.0	0.0	0.0	0.0	14.5
Siskiyou	53.4	0.0	0.0	0.0	0.6	0.8	48.8	68.5	0.0	10.4	0.0	0.0	0.0	0.0	177.5
Solano	41.6	0.0	0.0	16.9	29.1	23.1	15.0	19.5	18.6	2.7	1.6	9.7	0.0	1.9	179.7
Sonoma	0.0	0.0	0.0	0.0	0.6	3.1	0.0	9.0	0.0	0.8	0.0	6.9	0.0	33.2	53.6
Stanislaus	23.0	2.4	0.0	2.2	37.8	32.3	35.0	73.0	18.0	40.5	75.0	43.4	0.6	16.8	400.0
Sutter	30.4	88.8	0.0	4.5	3.3	31.1	6.5	8.2	22.3	11.8	4.5	53.0	0.0	0.1	263.0
Tehama	9.0	1.3	0.0	0.2	2.3	2.5	3.7	29.6	0.0	0.3	8.1	23.6	10.2	0.2	91.0
Trinity	0.1	0.0	0.0	0.0	0.0	0.0	0.2	1.1	0.0	0.0	0.0	0.0	0.0	0.0	1.4
Tulare	80.0	0.0	139.0	3.6	68.1	20.2	85.0	8.8	0.6	7.8	14.4	78.3	112.7	70.0	688.5
Tuolumne	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	0.0	0.0	0.0	0.1	0.0	0.1	2.9
Ventura	0.1	0.0	0.0	0.0	1.4	0.4	0.7	2.2	4.4	47.8	0.0	0.2	60.5	0.0	117.8
Yolo	75.5	24.3	0.0	6.3	13.8	38.6	38.1	8.7	65.4	18.6	8.6	15.0	0.0	2.7	315.6
Yuba	3.2	28.2	0.0	0.0	2.0	1.3	0.9	14.3	0.0	0.0	1.8	28.2	0.0	0.4	80.3
Totals	946.1	444.9	1,219.9	184.7	397.0	443.6	1,153.8	935.6	360.2	991.8	507.9	573.8	426.3	749.7	9,335.2

Table 10. Irrigated Crops in California, 1990 versus 1989

(1,000 acres)

	1990	1989	Change	Percentage
Grain	946.1	1,073.0	(127)	(12)
Rice	444.9	456.3	(11)	(2)
Cotton	1,219.9	1,163.0	57	5
Sugar Beets	184.7	203.6	(19)	(9)
Corn	397.0	387.2	10	3
Other Field	443.6	509.3	(66)	(13)
Alfalfa	1,153.8	1,099.7	54	5
Pasture	935.6	913.4	22	2
Tomatoes	360.2	300.5	60	20
Other Truck	991.8	995.8	(4)	0
Almond–Pistachio	507.9	509.5	(2)	0
Other Deciduous	573.8	582.3	(9)	(1)
Citrus–Olive	426.3	419.9	6	2
Grapes	749.7	746.8	3	0
Total Crop Acres	9,335.2	9,360.3	(25)	0
Double Crop	382.3	442.8	(61)	(14)
Total Irrigated Acres	**8,952.9**	**8,917.5**	**35**	**0**

Water Use and Supplies

Urban water use is water produced for all urban needs, including residential, commercial, industrial, and landscape uses. It is primarily measured at the intake of the water supplier's system and is equivalent to the amount of water delivered to customers plus losses from the delivery system. Urban water use data were analyzed on a per–capita basis. For a defined service area, applied water is divided by the population to compute per-capita use. Figure 5 compares monthly per-capita use for 1990 to the 1980-89 average for each hydrologic region. Per-capita use during 1990 averaged 6 percent less than the 1980-89 average, due largely to the effects of drought mitigation programs designed to cope with reduced surface supplies. The reduction in summer season demand was especially notable in the Central Coast Region. In general, per capita use shows a seasonal peak during the hot, dry summer months. In the North Lahontan Region, a secondary peak occurs during the winter tourist season.

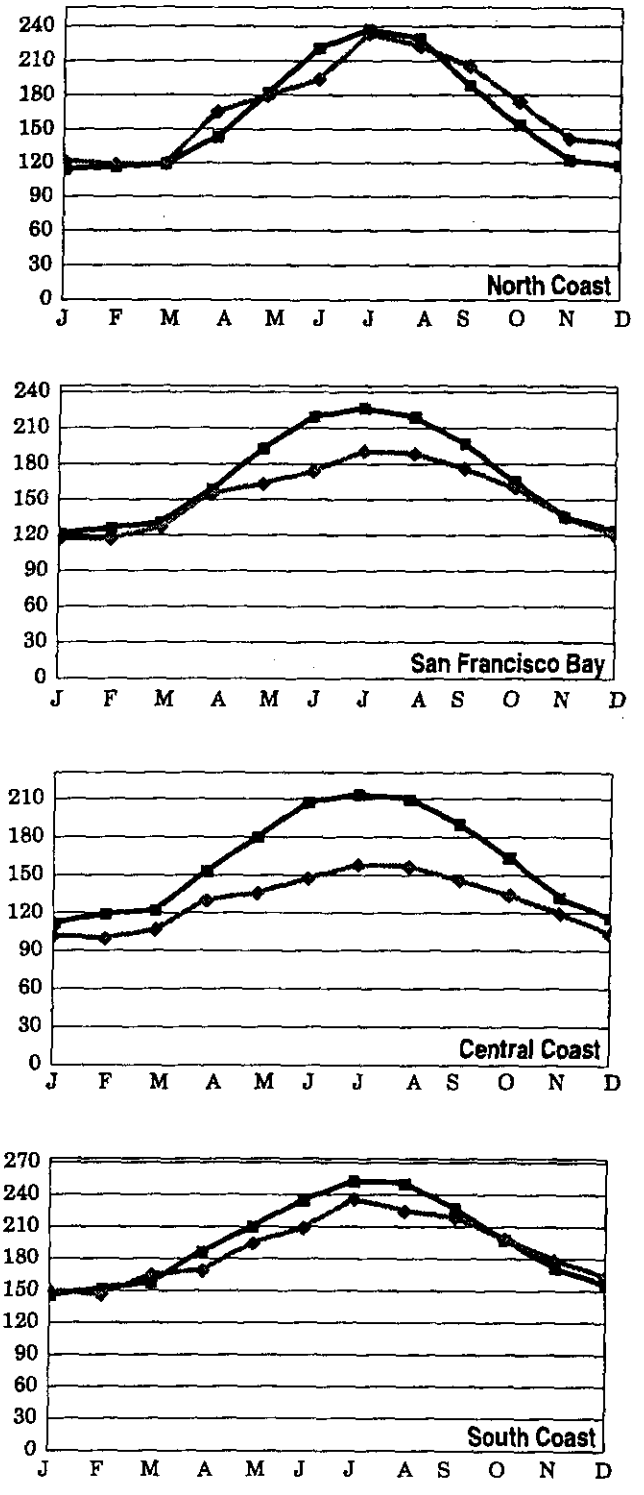
Environmental water use consists of: (1) instream fish flows, (2) Wild and Scenic Rivers flows, (3) required Delta outflow (Water Rights Decision 1485), and (4) wetlands water use. Instream fish flows for 1990 consist of existing water rights permits, court decisions, congressional directives, and laws or agreements between government agencies. Instream flow requirements generally vary by type of water year; hence, since 1990 was a very dry year, flows were at the lowest required levels (see Table 11). Wild and Scenic flows for the North Coast rivers were estimated (using data from the U.S. Geological Survey, Bulletin 1, and Bulletin 120) at 8,999,000 acre-feet (see Table 12). The 1990 Delta outflow as required under D–1485 was estimated using DAYFLOW daily data, operational data for the Delta condition of balance or surplus, and D–1485 criteria for a critical year in the Delta (see Table Table 13). Wetlands water use for 1990 is shown in Table 14.

Regional water use by urban, agricultural, environmental, and other sectors for 1990 is shown in Table 15. Statewide water use for 1990 is shown in Table 16. Urban and agricultural use were both affected by surface water shortages. For the State Water Project, deliveries to entities with agricultural contracts were cut by 50 percent in 1990, but deliveries to urban and agricultural contractors with prior water rights received a full supply. For the Central Valley Project, deliveries to contractors were reduced as follows: (1) Sacramento River water rights contracts, 25 percent; (2) Sacramento River and San Joaquin Valley project water contracts, 50 percent; (3) San Joaquin River Exchange contracts, 25 percent; and (4) Friant Kern Class 1 contracts, 68 percent. Colorado River supplies to California totaled 5.2 maf, representing a full surplus delivery. Of 163 municipal water agencies surveyed by DWR, 142 agencies had conservation programs; there were 101 voluntary programs and 41 mandatory. Of 72 agricultural districts surveyed, 55 had conservation programs. There were 34 voluntary programs and 21 mandatory, a higher ratio of mandatory programs in the agricultural industry than in municipalities.

Figure 5. Per-Capita Water Use by Hydrologic Region*

—◆— 1990 —■— 1980–89

gallons per capita daily by month

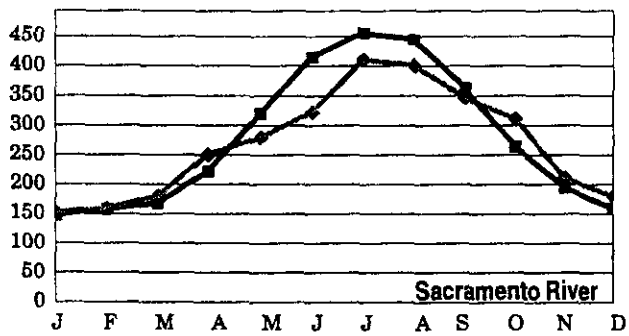


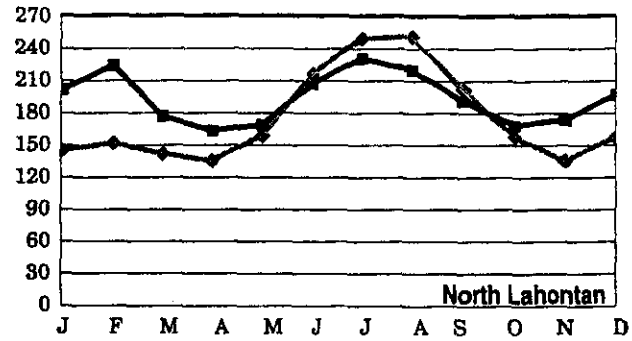
*Based on data from 297 urban water suppliers. Data does not include self-produced ground water supplies.

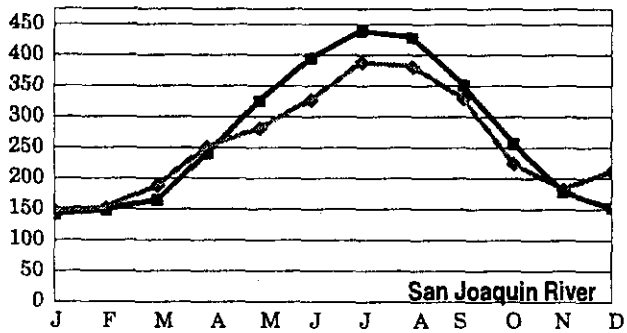
Per-Capita Water Use by Hydrologic Region* (continued)

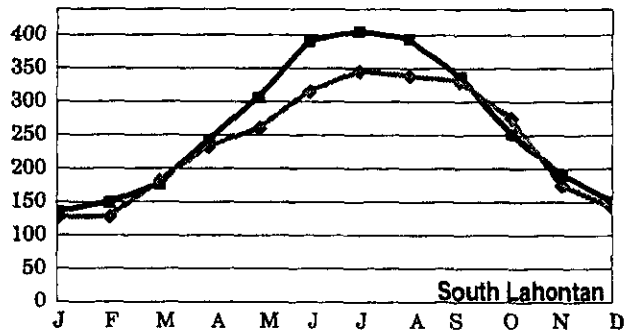
—◆— 1990 —■— 1980–89

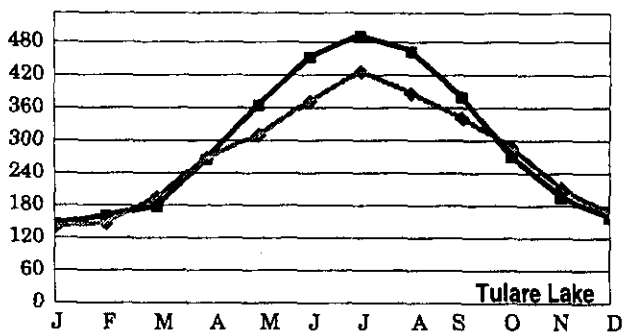
gallons per capita daily by month

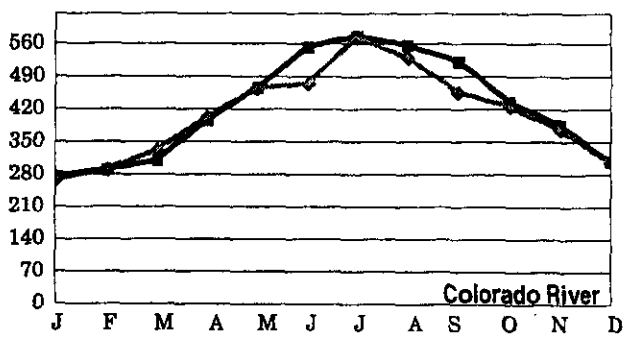












*Based on data from 297 urban water suppliers. Data does not include self-produced ground water supplies.

Table 11. 1990 Instream Fish Flows

(1,000 acre-feet)

Region	River	Applied Water	Net Water	Depletion
NC	Klamath	826	826	826
	Trinity	224	224	224
SR	Sacramento	2,040	2,040	0
	Feather	978	978	0
	Clear Creek	43	43	0
	Cache Creek	6	0	0
SR	Yuba	280	174	0
	Bear	10	10	0
	American	698	698	0
	Putah Creek	7	0	0
SJ	Mokelumne	30	27	0
	Stanislaus	113	113	0
SJ	Tuolumne	58	58	0
	Merced	68	68	0
CC	Carmel	2	0	0
SL	Mono	90	90	90
	Owens	21	21	0
	Total	5,493	5,370	1,140

Table 12. 1990 Wild and Scenic Rivers Flows

River	Thousand Acre-Feet	Average TAF	1990 Percentage	1990 TAF
Eel River at Mouth	6,273			
Less Van Arsdale	465	5,808	45[a]	2,614
Klamath River at Mouth	12,982			
Less Copco	2,008			
Less Lewiston	1,273			
Less Scott R	417			
Less Shasta R	201	9,083	50[a]	4,542
Smith River at Mouth		2,927	63[b]	1,844
Total		17,818		8,999

[a] Estimated from Department of Water Resources Snow Surveys 1990 fall report.

[b] Estimated from U.S. Geological Survey Water Resources Data 1990 report.

Table 13. 1990 Delta Outflow

(1,000 acre-feet)

	Total	D-1485
Oct	303	233
Nov	327	327
Dec	272	272
Jan	610	279
Feb	378	206
Mar	240	174
Apr	359	359
May	482	297
Jun	297	201
Jul	253	253
Aug	284	284
Sep	154	154
Water Year Total	3,960	3,041

Note: Total Delta outflow is the computed Delta outflow from DAYFLOW.
D-1485 is the estimated component of Total Delta outflow used to meet D-1485 standards, using DAYFLOW value when the Delta is in balance and D-1485 required flow when the Delta is not in balance.

Table 14. Wetlands Water Use

(1,000 acre-feet)

Wetland	Applied Water	Net Water	Depletion
Lower Klamath NWR	115.0	76.7	76.0
Clear Lake NWR	42.0	28.3	28.0
Tule Lake NWR	180.0	120.1	119.0
Butte Valley WA	10.2	10.2	10.2
Arcata Marsh	2.0	2.0	2.0
Modoc NWR	19.5	17.2	15.2
Ash Creek	12.9	12.3	12.2
Sacramento NWR	38.0	38.0	17.6
Colusa NWR	18.0	18.0	8.7
Delevan NWR	25.2	25.2	12.1
Colusa Basin Private	116.0	113.7	24.5
Gray Lodge WA	47.2	47.2	21.3
Butte Basin Private	132.7	111.2	31.9
Honey Lake WA	14.3	14.3	14.3
Willow Creek WA	2.5	2.5	2.5
Butte Sink NWR	2.2	0.5	0.5
Sutter NWR	9.1	4.3	4.3
American Basin	30.7	30.7	7.4
Sutter Basin	15.8	15.8	4.4
Yolo Basin	20.9	20.9	5.4
Sherman Island	9.3	9.3	1.9
Suisun Marsh	150.0	150.0	150.0
Hayward Marsh	10.0	10.0	10.0
Delta	40.0	40.0	7.4
San Luis NWR	13.3	9.0	9.0
Volta WA	5.1	4.0	4.0
Los Banos WA	9.5	8.0	8.0
Kesterson NWR	4.9	3.0	3.0
Grasslands RCD	73.4	43.0	43.0
Merced NWR	8.3	2.0	2.0
Kern NWR	6.2	3.0	3.0
Tulare Basin Refuge	5.2	4.0	4.0
Mendota WA	15.0	12.0	12.0
San Jacinto WA	1.0	1.0	1.0
Coastal Estuaries	1.0	1.0	1.0

Wetlands Water Use (continued)

(1,000 acre-feet)

Wetland	Applied Water	Net Water	Depletion
Salton Sea NWR	5.0	5.0	5.0
Imperial WA	29.0	29.0	29.0
Private	5.0	5.0	5.0
Statewide Total	**1,245.4**	**1,047.4**	**715.8**

Table 15. 1990 Regional Water Use by Planning Subarea

(1,000 acref-feet)

North Coast Region

	Upper Klamath	Lower Klamath	Coastal	Russian River	NC Total
Urban					
AW	10	11	76	67	163
NWU	10	11	76	67	163
Depletion	5	6	69	20	99
Agricultural					
AW	668	31	68	101	869
NWU	588	29	63	92	773
Depletion	466	22	51	75	614
Environmental					
AW	347	7,436	2,616	0	10,398
NWU	235	7,436	2,616	0	10,286
Depletion	233	7,436	2,616	0	10,284
Other					
AW	0	0	0	0	0
NWU	34	0	0	0	34
Depletion	6	0	0	0	6
Totals					
AW	**1,025**	**7,477**	**2,760**	**168**	**11,430**
NWU	**868**	**7,475**	**2,755**	**159**	**11,257**
Depletion	**709**	**7,464**	**2,735**	**95**	**11,003**

San Francisco Bay Region

	North Bay	South Bay	SF Total
Urban			
AW	147	947	1,094
NWU	147	947	1,094
Depletion	140	900	1,040
Agricultural			
AW	65	33	98
NWU	61	33	94
Depletion	58	31	89
Environmental			
AW	3,191	10	3,201
NWU	3,191	10	3,201
Depletion	3,191	10	3,201
Other			
AW	0	0	0
NWU	4	14	18
Depletion	2	13	15
Totals			
AW	**3,403**	**990**	**4,393**
NWU	**3,403**	**1,004**	**4,407**
Depletion	**3,391**	**954**	**4,345**

1990 Regional Water Use by Planning Subarea (continued)

(1,000 acref-feet)

Central Coast Region

	Northern	Southern	CC Total
Urban			
AW	151	95	246
NWU	130	74	205
Depletion	117	60	178
Agricultural			
AW	723	428	1,151
NWU	562	339	902
Depletion	559	339	899
Environmental			
AW	2	0	2
NWU	0	0	0
Depletion	0	0	0
Other			
AW	2	16	18
NWU	2	16	18
Depletion	2	16	18
Totals			
AW	**878**	**539**	**1,416**
NWU	**695**	**429**	**1,124**
Depletion	**679**	**416**	**1,094**

South Coast Region

	Santa Clara	Metro LA	Santa Ana	San Diego	SC Total
Urban					
AW	169	1,781	1,052	600	3,602
NWU	142	1,710	855	591	3,299
Depletion	139	1,679	734	584	3,135
Agricultural					
AW	245	15	226	239	725
NWU	214	13	187	230	645
Depletion	214	13	187	230	645
Environmental					
AW	0	0	0	1	1
NWU	0	0	0	1	1
Depletion	0	0	0	1	1
Other					
AW	13	21	14	4	51
NWU	23	92	64	41	219
Depletion	23	92	64	41	219
Totals					
AW	**427**	**1,817**	**1,292**	**844**	**4,380**
NWU	**379**	**1,815**	**1,106**	**864**	**4,164**
Depletion	**376**	**1,784**	**985**	**856**	**4,000**

1990 Regional Water Use by Planning Subarea (continued)

(1,000 acre-feet)

Sacramento River Region

	Shasta Pit	NW Valley	NE Valley	C Basin W	C Basin E	S.E.	S.W.	Delta Srv Area	SR Total
Urban									
AW	11	55	59	70	426	68	9	17	715
NWU	11	55	59	70	427	68	9	17	716
Depletion	6	21	30	28	173	24	5	5	290
Agricultural									
AW	445	497	315	2,808	2,774	415	64	461	7,778
NWU	364	460	328	2,116	2,545	368	58	433	6,671
Depletion	333	384	241	1,869	1,911	270	42	403	5,453
Environmental									
AW	2,072	43	0	218	1,226	978	13	9	4,560
NWU	2,070	43	0	216	1,092	978	0	9	4,407
Depletion	27	0	0	68	70	0	0	2	167
Other									
AW	0	0	0	7	107	52	0	43	209
NWU	0	32	11	166	215	52	0	42	519
Depletion	0	9	11	26	21	5	0	0	72
Totals									
AW	**2,528**	**595**	**374**	**3,103**	**4,533**	**1,512**	**86**	**530**	**13,262**
NWU	**2,445**	**590**	**398**	**2,568**	**4,278**	**1,466**	**67**	**501**	**12,313**
Depletion	**366**	**414**	**282**	**1,991**	**2,174**	**298**	**47**	**410**	**5,983**

San Joaquin River Region

	Sierra Foothill	E Vly Flr	Delta Srv Area	Western Uplands	E Side Uplands	Vly E Side	Vly W Side	SJ Total
Urban								
AW	37	75	34	38	11	279	17	491
NWU	44	75	34	38	5	149	9	354
Depletion	14	23	10	11	5	135	9	207
Agricultural								
AW	35	1,055	810	51	7	3,216	1,422	6,597
NWU	39	1,034	751	52	4	3,029	1,352	6,261
Depletion	24	692	550	32	4	2,317	1,063	4,681
Environmental								
AW	58	182	0	0	0	76	106	423
NWU	58	180	0	0	0	70	67	375
Depletion	0	7	0	0	0	2	67	76
Other								
AW	7	21	0	0	4	17	4	53
NWU	7	21	0	0	4	29	150	211
Depletion	0	8	0	0	4	14	148	174
Totals								
AW	**137**	**1,334**	**844**	**89**	**21**	**3,588**	**1,549**	**7,563**
NWU	**148**	**1,309**	**785**	**90**	**13**	**3,277**	**1,578**	**7,200**
Depletion	**38**	**730**	**560**	**43**	**13**	**2,468**	**1,286**	**5,137**

1990 Regional Water Use by Planning Subarea (continued)

(1,000 acre-feet)

Tulare Lake Region

	Uplands	KKT	San Luis Westside	Western Uplands	Kern Vly Floor	TL Total
Urban						
AW	12	319	10	2	180	523
NWU	5	134	4	1	70	214
Depletion	5	134	4	1	70	214
Agricultural						
AW	28	5,142	1,597	0	2,680	9,447
NWU	19	4,002	1,425	0	2,186	7,632
Depletion	19	3,982	1,425	0	2,186	7,612
Environmental						
AW	0	15	0	0	11	26
NWU	0	12	0	0	7	19
Depletion	0	12	0	0	7	19
Other						
AW	6	1	7	0	52	66
NWU	6	16	7	0	97	141
Depletion	6	16	7	0	97	141
Totals						
AW	**46**	**5,477**	**1,614**	**2**	**2,924**	**10,062**
NWU	**30**	**4,178**	**1,436**	**1**	**2,360**	**8,006**
Depletion	**30**	**4,158**	**1,436**	**1**	**2,360**	**7,986**

North Lahontan Region

	Lassen Group	Alpine Group	NL Total
Urban			
AW	17	20	37
NWU	17	21	38
Depletion	7	6	13
Agricultural			
AW	331	207	538
NWU	281	206	487
Depletion	263	96	359
Environmental			
AW	17	0	17
NWU	17	0	17
Depletion	17	0	17
Other			
AW	0	0	0
NWU	0	0	0
Depletion	0	0	0
Totals			
AW	**365**	**227**	**592**
NWU	**315**	**227**	**542**
Depletion	**287**	**102**	**389**

1990 Regional Water Use by Planning Subarea (continued)

(1,000 acre-feet)

South Lahontan Region

	Mono Owens	Death Valley	Indian Wells	Antelope Valley	Mojave River	SL Total
Urban						
AW	13	0	12	70	67	162
NWU	7	0	7	47	42	104
Depletion	7	0	7	47	42	104
Agricultural						
AW	155	10	18	49	80	312
NWU	141	9	17	47	70	284
Depletion	141	9	17	47	70	284
Environmental						
AW	111	0	0	0	0	111
NWU	111	0	0	0	0	111
Depletion	90	0	0	0	0	90
Other						
AW	0	3	1	1	4	9
NWU	0	3	1	6	4	14
Depletion	0	3	1	6	4	14
Totals						
AW	**278**	**13**	**31**	**121**	**150**	**594**
NWU	**259**	**12**	**24**	**100**	**117**	**512**
Depletion	**238**	**12**	**24**	**100**	**117**	**491**

Colorado River

	29 Palms Lanfair	Chuckwalla	Colorado River	Coachella	Borrego	Imperial Valley	CR Total
Urban							
AW	10	0	12	151	2	31	206
NWU	5	0	7	99	1	31	144
Depletion	5	0	7	99	1	31	144
Agricultural							
AW	27	17	661	393	37	2,553	3,687
NWU	24	15	557	313	37	2,553	3,499
Depletion	24	15	557	313	37	2,553	3,499
Environmental							
AW	0	0	0	0	0	39	39
NWU	0	0	0	0	0	39	39
Depletion	0	0	0	0	0	39	39
Other							
AW	1	0	3	2	0	76	82
NWU	1	0	3	42	0	396	442
Depletion	1	0	3	42	0	396	442
Totals							
AW	**37**	**17**	**676**	**546**	**38**	**2,698**	**4,013**
NWU	**31**	**15**	**567**	**454**	**38**	**3,019**	**4,123**
Depletion	**31**	**15**	**567**	**454**	**38**	**3,019**	**4,123**

Table 16. 1990 Water Use in California by Region

(1,000 acre-feet)

	NC	SF	CC	SC	SR	SJ	TL	NL	SL	CR	Total
Urban											
AW	163	1,094	246	3,602	715	491	523	37	162	206	7,239
NWU	163	1,094	205	3,299	716	354	214	38	104	144	6,330
Depletion	99	1,040	178	3,135	290	207	214	13	104	144	5,424
Agricultural											
AW	869	98	1,151	725	7,778	6,597	9,447	538	312	3,687	31,202
NWU	773	94	902	645	6,671	6,261	7,632	487	284	3,499	27,247
Depletion	614	89	899	645	5,453	4,681	7,612	359	284	3,499	24,134
Environmental											
AW	10,398	3,201	2	1	4,560	423	26	17	111	39	18,778
NWU	10,286	3,201	0	1	4,407	375	19	17	111	39	18,457
Depletion	10,284	3,201	0	1	167	76	19	17	90	39	13,895
Other											
AW	0	0	18	51	209	53	66	0	9	82	488
NWU	34	18	18	219	519	211	141	0	14	442	1,615
Depletion	6	15	18	219	72	174	141	0	14	442	1,101
Totals											
AW	**11,430**	**4,393**	**1,416**	**4,380**	**13,262**	**7,563**	**10,062**	**592**	**594**	**4,013**	**57,707**
NWU	**11,257**	**4,407**	**1,124**	**4,164**	**12,313**	**7,200**	**8,006**	**542**	**512**	**4,123**	**53,648**
Depletion	**11,003**	**4,345**	**1,094**	**4,000**	**5,983**	**5,137**	**7,986**	**389**	**491**	**4,123**	**44,552**

Table 17. 1990 Environmental Water Use in California by Region

(1,000 acre-feet)

	NC	SF	CC	SC	SR	SJ	TL	NL	SL	CR	Total
Instream											
AW	1,050	0	2	0	4,062	268	0	0	111	0	5,493
NWU	1,050	0	0	0	3,943	266	0	0	111	0	5,370
Depletion	1,050	0	0	0	0	0	0	0	90	0	1,140
Wild & Scenic											
AW	8,999	0	0	0	0	0	0	0	0	0	8,999
NWU	8,999	0	0	0	0	0	0	0	0	0	8,999
Depletion	8,999	0	0	0	0	0	0	0	0	0	8,999
Refuges											
AW	349	160	0	2	498	154	26	17	0	39	1,245
NWU	237	160	0	2	464	109	19	17	0	39	1,047
Depletion	235	160	0	2	167	76	19	17	0	39	716
D1485											
AW	0	3,041	0	0	0	0	0	0	0	0	3,041
NWU	0	3,041	0	0	0	0	0	0	0	0	3,041
Depletion	0	3,041	0	0	0	0	0	0	0	0	3,041
Totals											
AW	**10,398**	**3,201**	**2**	**2**	**4,560**	**419**	**26**	**17**	**111**	**39**	**18,779**
NWU	**10,286**	**3,201**	**0**	**2**	**4,407**	**371**	**19**	**17**	**111**	**39**	**18,457**
Depletion	**10,284**	**3,201**	**0**	**2**	**167**	**76**	**19**	**17**	**90**	**39**	**13,896**

Table 18. 1990 State Water Project Delivery Summary

(acre-feet)

	Region	SWP	Non-SWP	Total	Region Total
Napa Co FC&WCD	SF	6,940	6,373	13,313	218,691
Solano Co WA		19,131	748	19,879	
Alameda Co FC&WCD		33,034	0	33,034	
Alameda Co WD		31,703	0	31,703	
Santa Clara Valley WD		91,800	28,962	120,762	
San Bernardino Valley MWD	SC	18,831	0	18,831	1,458,878
Gabriel Valley WD		16,649	0	16,649	
Ventura Co FCD		4,836	0	4,836	
Castaic Lake WA		22,139	0	22,139	
Metropolitan WD of So. California		1,396,423	0	1,396,423	
City of Yuba City	SR	494	0	494	1,422
County of Butte		380	0	380	
Plumas Co FC&WCD		548	0	548	
Oak Flat WD	SJ	3,212	0	3,212	3,212
Empire West Side ID	TL	1,279	2,031	3,310	847,275
Tulare Lake Basin WSD		55,370	31,211	86,581	
Dudley Ridge WD		36,657	0	36,657	
Kern Co WA		712,287	0	712,287	
Devil's Den WD		6,440	0	6,440	
County of Kings		2,000	0	2,000	
Littlerock Creek ID	SL	1,747	0	1,747	59,388
Crestline-Lake Arrowhead WA		1,827	0	1,827	
Antelope Valley-East Kern WA		47,206	0	47,206	
Palmdale WD		8,608	0	8,608	
Coachella Valley WD	CR	23,100	0	23,100	61,200
Desert WA		38,100	0	38,100	
Recreation/F&W Water		9,262	0	9,262	9,262
Total		2,590,003	69,325	2,659,328	2,659,328

Source: Table 12 in *Management of the California State Water Project*, Bulletin 132–91, Department of Water Resources, 1991.

Table 19. 1990 U.S. Bureau of Reclamation Delivery Summary

(acre-feet)

	AG	M&I	Waterfowl	Total
Black Butte Unit	1,241	412		1,653
Cachuma Dam	8,981	8,141		17,122
Clear Creek South	11,031	1,078		12,109
Colusa Basin Drain	25,976			25,976
Contra Costa Canal	932	125,060		125,992
Corning Canal	21,591			21,591
Cow Creek Unit	18,599	3,053		21,652
Cross Valley Canal	70,393	459		70,852
Delta	0	43		43
Delta Mendota Canal	229,571	5,545		235,116
Exchange Contractors	775,402			775,402
Folsom Lake	1,938	72,916		74,854
Folsom South Canal	110	30,162		30,272
Friant–Kern Canal	447,418	40,873		488,291
Lake Berryessa		254		254
Lower American		50,287		50,287
Madera Canal	106,858	0		106,858
Mendota Pool	94,390			94,390
Millerton Lake		171		171
Putah South Canal	124,670	39,921		164,591
Sacramento River	1,643,785	53,510	46,349	1,743,644
San Felipe Div	26,773	65,390		92,163
San Joaquin Valley	17,602			17,602
San Luis Canal	1,610,277	13,470	87	1,623,834
Shasta Lake	0	2,832		2,832
Sly Park Unit	9,656	1,380		11,036
Spring Creek Conduit		569		569
Tehama Colusa Canal	176,802			176,802
Toyon Pipeline		2,007		2,007
Tulelake–P–Canal	0			0
Upper American River	666	887		1,553
Waterfowl Conservation	0		90,374	90,374
Waterfowl Dist			67,785	67,785
Miscellaneous	7,107		485	7,592
Total	**5,431,769**	**518,420**	**205,080**	**6,155,269**

Source: U.S. Bureau of Reclamation Repayments Section, 2800 Cottage Way, Sacramento, CA
Water Deliveries and Revenues, Fiscal Year 1990, October 1, 1989 through September 30, 1990, Run Date October 10, 1990.

Table 20. 1990 Regional Water Budgets

(1,000 acre-feet)

North Coast Region

	Upper Klamath	Lower Klamath	Coastal	River	Total
Net Use					
Urban	10	11	76	67	163
Ag	588	29	63	92	773
Environmental	235	7,436	2,616	0	10,286
Other	34	0	0	0	34
Total Net Use	**868**	**7,475**	**2,755**	**159**	**11,257**
Supplies					
Local	249	28	86	130	493
Imported by Local	0	0	0	0	0
Ground Water	148	12	54	29	242
Reclaimed	0	0	2	0	2
Colorado River	0	0	0	0	0
CVP	0	0	0	0	0
Other Federal	471	0	0	0	471
SWP	0	0	0	0	0
Dedicated Natural Flow	0	7,436	2,614	0	10,049
Total Supplies	**868**	**7,475**	**2,755**	**159**	**11,257**

San Francisco Bay Region

	North Bay	South Bay	Total
Net Use			
Urban	147	947	1,094
Ag	61	33	94
Environmental	3,191	10	3,201
Other	4	14	18
Total Net Use	**3,403**	**1,004**	**4,407**
Supplies			
Local	217	60	277
Imported by Local	36	493	529
Ground Water	31	106	137
Reclaimed	3	19	22
Colorado River	0	0	0
CVP	0	166	166
Other Federal	53	0	53
SWP	22	160	182
Dedicated Natural Flow	3,041	0	3,041
Total Supplies	**3,403**	**1,004**	**4,407**

1990 Regional Water Budgets (continued)

(1,000 acre-feet)

Central Coast Region

	Northern	Southern	Total
Net Use			
Urban	130	74	205
Ag	562	339	902
Environmental	0	0	0
Other	2	16	18
Total Net Use	**695**	**429**	**1,124**
Supplies			
Local	16	12	28
Imported by Local	0	0	0
Ground Water	651	358	1,009
Reclaimed	1	14	15
Colorado River	0	0	0
CVP	27	0	27
Other Federal	0	45	45
SWP	0	0	0
Dedicated Natural Flow	0	0	0
Total Supplies	**695**	**429**	**1,124**

South Coast Region

	Santa Clara	Metro LA	Santa Ana	San Diego	SC Total
Net Use					
Urban	142	1,710	855	591	3,299
Ag	214	13	187	230	645
Environmental	0	0	0	1	1
Other	23	92	64	41	219
Total Net Use	**379**	**1,815**	**1,106**	**864**	**4,164**
Supplies					
Local	5	15	29	16	65
Imported by Local	0	106	0	0	106
Ground Water	211	568	482	70	1,330
Reclaimed	3	31	40	8	82
Colorado River	0	476	230	532	1,238
CVP	0	0	0	0	0
Other Federal	22	0	0	0	22
SWP	139	619	325	238	1,322
Dedicated Natural Flow	0	0	0	0	0
Total Supplies	**380**	**1,815**	**1,106**	**864**	**4,165**

1990 Regional Water Budgets (continued)

(1,000 acre-feet)

Sacramento River Region

	Shasta Pit	NW Valley	NE Valley	S.E.	C Basin W	C Basin E	S.W.	Delta Srv Area	SR Total
Net Use									
Urban	11	55	59	68	70	427	9	17	716
Ag	364	460	328	368	2,116	2,545	58	433	6,671
Environmental	2,070	43	0	978	216	1,092	0	9	4,407
Other	0	32	11	52	166	215	0	42	519
Total Net Use	2,445	590	398	1,466	2,568	4,278	67	501	12,313
Supplies									
Local	324	25	118	416	82	1,626	15	340	2,946
Imported by Local	0	0	0	6	0	0	0	0	6
Ground Water	80	291	220	60	1,171	1,073	52	80	3,027
Reclaimed	0	0	0	0	0	0	0	0	0
Colorado River	0	0	0	0	0	0	0	0	0
CVP	0	150	60	5	1,191	585	0	81	2,073
Other Federal	0	82	0	0	124	111	0	0	317
SWP	0	0	0	0	0	1	0	0	2
Dedicated Natural Flow	2,040	43	0	978	0	882	0	0	3,943
Total Supplies	2,445	590	398	1,466	2,568	4,278	67	501	12,313

San Joaquin River Region

	Sierra Foothill	E VLY Flr	Delta Srv Area	Western Uplands	E Side Uplands	Vly E Side	Vly W Side	SR Total
Net Use								
Urban	44	75	34	38	5	149	9	354
Ag	39	1,034	751	52	4	3,029	1,352	6,261
Environmental	58	180	0	0	0	70	67	371
Other	7	21	0	0	4	29	150	211
Total Net Use	148	1,309	785	90	13	3,277	1,578	7,200
Supplies								
Local	64	210	713	23	12	1,724	160	2,907
Imported by Local	0	0	0	0	0	0	0	0
Ground Water	19	914	47	5	1	1,310	77	2,372
Reclaimed	0	0	0	0	0	0	0	0
Colorado River	0	0	0	0	0	0	0	0
CVP	7	16	25	62	0	175	1,338	1,623
Other Federal	0	27	0	0	0	0	0	27
SWP	0	0	0	0	0	0	3	3
Dedicated Natural Flow	58	142	0	0	0	68	0	268
Total Supplies	148	1,309	785	90	13	3,277	1,578	7,200

1990 Regional Water Budgets (continued)

(1,000 acre-feet)

Tulare Lake Region

	Uplands	KKT	San Luis Westside	Western Uplands	Kern Vly Floor	TL Total
Net Use						
Urban	5	134	4	1	70	214
Ag	19	4,002	1,425	0	2,186	7,632
Environmental	0	12	0	0	7	19
Other	6	31	7	0	97	141
Total Net Use	**30**	**4,178**	**1,436**	**1**	**2,360**	**8,006**
Supplies						
Local	16	768	0	0	179	963
Imported by Local	0	0	0	0	0	0
Ground Water	13	2,938	662	1	1,060	4,675
Reclaimed	0	0	0	0	0	0
Colorado River	0	0	0	0	0	0
CVP	0	379	725	0	227	1,330
Other Federal	0	0	0	0	0	0
SWP	1	94	49	0	894	1,037
Dedicated Natural Flow	0	0	0	0	0	0
Total Supplies	**30**	**4,178**	**1,436**	**1**	**2,360**	**8,006**

North Lahontan Region

	Lassen Group	Alpine Group	NL Total
Net Use			
Urban	17	21	38
Ag	281	206	487
Environmental	17	0	17
Other	0	0	0
Total Net Use	**315**	**227**	**542**
Supplies			
Local	164	158	322
Imported by Local	0	0	0
Ground Water	144	64	208
Reclaimed	3	5	8
Colorado River	0	0	0
CVP	0	0	0
Other Federal	3	0	3
SWP	0	0	0
Dedicated Natural Flow	0	0	0
Total Supplies	**314**	**227**	**542**

1990 Regional Water Budgets (continued)

(1,000 acre-feet)

South Lahontan Region

	Mono Owens	Death Valley	Indian Wells	Antelope Valley	Mojave River	SL Total
Net Use						
Urban	7	0	7	47	42	104
Ag	141	9	17	47	70	284
Environmental	111	0	0	0	0	111
Other	0	3	1	6	4	14
Total Net Use	259	12	24	100	117	512
Supplies						
Local	52	0	0	5	0	57
Imported by Local	0	0	0	0	0	0
Ground Water	96	12	22	33	109	272
Reclaimed	1	0	1	6	5	13
Colorado River	0	0	0	0	0	0
CVP	0	0	0	0	0	0
Other Federal	0	0	0	0	0	0
SWP	0	0	1	56	2	59
Dedicated Natural Flow	111	0	0	0	0	111
Total Supplies	259	12	24	100	117	512

Colorado River Region

	29 PALMS Lanfair	Chuckwalla	Colorado River	Coach	Borrego	Imperial Valley	CR Total
Net Use							
Urban	5	0	7	99	1	31	144
Ag	24	15	557	313	37	2,553	3,499
Environmental	0	0	0	0	0	39	39
Other	1	0	3	42	0	396	442
Total Net Use	31	15	567	454	38	3,019	4,123
Supplies							
Local	0	0	0	4	0	0	4
Imported by Local	0	0	0	0	0	0	0
Ground Water	29	15	10	18	3	0	75
Reclaimed	2	0	0	5	0	0	7
Colorado River	0	0	557	365	35	3,019	3,976
CVP	0	0	0	0	0	0	0
Other Federal	0	0	0	0	0	0	0
SWP	0	0	0	61	0	0	61
Dedicated Natural Flow	0	0	0	0	0	0	0
Total Supplies	31	15	567	454	38	3,019	4,123

Table 21. California Water Budget by Region

(1,000 acre-feet)

	NC	SF	CC	SC	SR	SJ	TL	NL	SL	CR	CA
Net Use											
Urban	163	1,094	205	3,299	716	354	214	38	104	144	6,330
Ag	773	94	902	645	6,671	6,261	7,632	487	284	3,499	27,247
Environmental	10,286	3,201	0	1	4,407	375	19	17	111	39	18,457
Other	34	18	18	219	519	211	141	0	14	442	1,615
Total Net Use	**11,257**	**4,407**	**1,124**	**4,164**	**12,313**	**7,200**	**8,006**	**542**	**512**	**4,123**	**53,648**
Supplies											
Local	493	277	28	65	2,946	2,907	963	322	57	4	8,061
Imported by Local	0	529	0	106	6	0	0	0	0	0	641
Ground Water	242	137	1,009	1,330	3,027	2,372	4,675	208	272	75	13,348
Reclaimed	2	22	15	82	0	0	0	8	13	7	149
Colorado River	0	0	0	1,238	0	0	0	0	0	3,976	5,213
CVP	0	166	27	0	2,073	1,623	1,330	0	0	0	5,219
Other Federal	471	53	45	22	317	27	0	3	0	0	937
SWP	0	182	0	1,322	2	3	1,037	0	59	61	2,666
Dedicated Natural Flow	10,049	3,041	0	0	3,943	268	0	0	111	0	17,412
Total Supplies	**11,257**	**4,407**	**1,124**	**4,165**	**12,313**	**7,200**	**8,006**	**542**	**512**	**4,123**	**53,648**

Table 22. Ground Water Changes
Northern District, Fall 1989 to Fall 1990

Planning Subarea	Detailed Analysis Unit	County	Basin	Elevation Change (feet)
Upper Klamath	Lost River	Modoc	Klamath River Valley	−0.5
		Siskiyou	Klamath River Valley	−2.3
	Butte Valley	Siskiyou	Siskiyou Butte Valley	−2.0
	Scott Valley	Siskiyou	Scott River Valley	−1.8
	Shasta Valley	Siskiyou	Shasta Valley	−2.9
Lower Klamath	Trinity	Humboldt	Hoopa Valley	−0.6
	Lower Klamath	Del Norte	Klamath River Mouth	1.6
		Humboldt	Prairie Creek	−1.7
	Smith River	Del Norte	Smith River Plain	−0.2
Coastal	Lower Eel	Humboldt	Eel River	−1.0
	Van Duzen	Humboldt	Eel River	−1.0
	S.F. Eel	Mendocino	Laytonville	−0.3
	Upper Eel	Mendocino	Covelo Round Valley	−1.6
		Mendocino	Little Lake Valley	−0.3
	Redwood Creek	Humboldt	Prairie Creek	−1.7
		Humboldt	Redwood Creek	−0.7
	Mad−Trinidad	Humboldt	Humboldt Big Lagoon	−1.5
		Humboldt	Mad River Valley	−0.4
	Eureka Plain	Humboldt	Eureka Plain	−1.3
		Humboldt	Mad River Valley	−0.9
Shasta Lake-Pit River	Goose Lake-Alturas	Lassen	Alturas	−1.3
		Modoc	Alturas	−1.3
		Modoc	Goose Lake	−2.4
	Big Valley	Lassen	Big Valley	−0.9
		Modoc	Big Valley	−4.5
		Modoc	Round Valley	−0.8
	MacArthur-Hat Creek	Lassen	Fall River Valley	−1.1
		Shasta	Fall River Valley	−1.7
Northwest Valley	Redding West	Shasta	Redding	0.0
		Tehama	Redding	0.1
	Red Bluff−Orland	Glenn	Sacramento Valley	−9.5
		Tehama	Sacramento Valley	−8.0
Northeast Valley	Redding East	Shasta	Redding	−4.1
		Tehama	Redding	−4.1
	Los Molinos	Butte	Sacramento Valley	−6.2
		Tehama	Sacramento Valley	−1.3

Ground Water Changes (continued)
Northern District, Fall 1989 to Fall 1990

Planning Subarea	Detailed Analysis Unit	County	Basin	Elevation Change (feet)
Southeast	Feather River	Plumas	Almanor	−1.9
		Plumas	Mohawk Valley	−2.1
		Plumas	Sierra Valley	2.3
		Sierra	Sierra Valley	1.2
Central Basin West	Willows−Arbuckle	Colusa	Sacramento Valley	−7.1
		Glenn	Sacramento Valley	−7.7
	Glenn−Knights Ld	Colusa	Sacramento Valley	−1.1
Central Basin East	Durham−Sutter	Butte	Sacramento Valley	−2.5
		Glenn	Sacramento Valley	−2.5
	Butte City	Butte	Sacramento Valley	−1.1
		Colusa	Sacramento Valley	−1.1
		Glenn	Sacramento Valley	−0.7
	Yuba City−Gridley	Butte	Sacramento Valley	−0.7
	Honcut Valley	Butte	Sacramento Valley	−8.8
Southwest	Cache Creek	Lake	Burns Valley	−0.2
		Lake	High Valley	−4.9
		Lake	Kelseyville Valley	−2.8
		Lake	Scotts Valley	−3.5
		Lake	Upper Lake	0.5
	Putah Creek	Lake	Coyote Valley	−1.3
		Lake	Middletown-Collayomi Valley	−2.5
Lassen Group	Surprise Valley	Lassen	Surprise Valley	−6.8
		Modoc	Surprise Valley	−6.8
	Madeline Plains	Lassen	Termo−Madeline Plains	−1.0
	Susanville	Lassen	Honey Lake	−4.3
	Herlong	Lassen	Honey Lake	−1.4
		Lassen	Long Valley	−0.3
		Sierra	Long Valley	−0.4
	Upper Honey Lake	Lassen	Secret Valley	−5.8
		Lassen	Willow Creek Valley	−1.8

Ground Water Changes (continued)
Central District, Fall 1989 to Fall 1990

Planning Subarea	Detailed Analysis Unit	County	Basin	Elevation Change (feet)
Central Basin E	Meridian–Robbins, Durham–Sutter, YubaCity–Gridley, & Placer	Sutter	Sacramento Valley	−1.3
	Yuba	Yuba	Sacramento Valley	0.5
	Placer	Placer	Sacramento Valley	−0.3
	Placer, Sacto	Sacramento	Sacramento Valley	−1.7
Eastern Valley Floor	Elk Grove	Sacramento	Sacramento Valley	−4.5
Central Basin W	Vacaville	Solano	Sacramento Valley	−5.6
	Lower Cache, Willows–Arbuckle, & Glenn–Knights Landing	Yolo	Sacramento Valley	−10.9
	Lower Cache	Yolo	Capay Valley	−5.1
Eastern Valley Floor	Lodi, S San Joaquin, & Modesto Oakdale	San Joaquin	San Joaquin Valley	−5.6
Alpine Group	Truckee–Tahoe	El Dorado	S Lake Tahoe Vly	−1.9
Western Upland	Antioch-Coral Hollow	Contra Costa	E Contra Costa	
Russian River	Coyote	Mendocino	Potter Valley	−0.8
	Forsythe & Upper Russian	Mendocino	Ukiah Valley	−1.0
	Upper Russian	Mendocino	Sanel Valley	
	Middle Russian	Sonoma	Alexander Valley	−2.5
	Middle Russian & Dry Creek	Sonoma	Healdsburg	−2.9
	Santa Rosa	Sonoma	Santa Rosa	−4.5
North Bay	South Marin	Sonoma	Petaluma Valley	−3.8
	South Sonoma	Sonoma	Sonoma Valley	−5.8
	Napa	Napa	Napa Valley	4.5
	Solano	Solano	Suisun–Fairfield	−0.4
South Bay	Walnut Creek	Contra Costa	Pittsburg	−0.8
	Walnut Creek	Contra Costa	Clayton Valley	−1.4
	Walnut Creek	Contra Costa	Ygnacio Valley	−0.8
	San Mateo Coast	San Mateo	Half Moon Bay	−0.9
			San Gregario Valley	−17.9
			Pescadero Valley	−0.3
	San Jose	Santa Clara	Santa Clara Valley	15.0
			Llagas	0.0
Central Coast North	S Santa Clara Vly		Coyote	−10.0

Ground Water Changes (continued)
San Joaquin District, Spring 1989 to Spring 1990*

Planning Subarea/Detailed)Analysis Unit	Elevation (feet)	Storage (1,000 acre-feet)
Valley East Side	−3.8	−593
206 Modesto−Oakdale	−0.7	−21
207 Modesto Reservoir	1.3	6
208 Turlock	0.8	21
209 Turlock Lake	0.2	2
210 Merced	−4.4	−83
211 Merced Stream Group	−5.7	−20
212 El Nido−Stevinson	−6.3	−127
213 Madera-Chowchilla	−9.3	−184
214 Adobe	−5.1	−83
215 Gravelly Ford	−6.2	−106
Valley West Side	0.5	35
216 West Side	0.5	35
Kings−Kaweah−Tule	−5.2	−1,266
233 Fresno	−1.9	−59
234 Academy	−4.2	−11
235 Raisin	−2.1	−53
236 Consolidated	−5.0	−145
237 Lower Kings River	−2.5	−55
238 Hanford−Lemoore	−4.1	−84
239 Alta	−7.3	−101
240 Orange Cove	−2.0	−4
241 Tulare Lake	−3.9	−25
242 Kaweah Delta	−8.8	−406
243 Tule Delta	−7.0	−322
San Luis West Side	2.5	95
244 Westlands	3.6	95
245 Kettleman Plain	0.0	0
246 South Tulare Lake	−1.2	0
Kern Valley Floor	−3.1	−347
254 Kern Delta	−2.2	−102
255 Semitropic	−1.1	−36
256 North Kern	−6.0	−136
257 Northeastern Kern	−3.5	−10
258 Arvin−Edison	−4.8	−32
259 Antelope Plain	−4.6	−33
260 Buena Vista Valley	0.1	0
261 Wheeler Ridge−Maricopa	0.7	2
Central Coast North		
48 Pressure	−7.6	N/A
49 East Side	−9.8	N/A
50 Forebay	−8.9	N/A
51 Upper Valley	−8.0	N/A
60 Santa Cruz	−30 to+13	N/A
62 South Santa Clara Valley	12.8	N/A

*Based on water levels in unconfined aquifers between 0 and 300 foot depth. PSA water level change is based on areal weighting of DAU data.

Ground Water Changes (continued)
Southern District, Fall 1989 to Fall 1990

County	Basin	Elevation Change (feet)
Los Angeles	Central	−3
	West Coast	1
	Main San Gabriel	−18
	San Gabriel Canyon	22
	Pomona	10
	Raymond	−17
	San Fernando	−4
	Santa Clara	−4
	Antelope Valley	−5
Los Angeles–San Bernardino	Chino	3
San Bernardino	Colton-Riverside	−4
Riverside	Yucaipa	−13
San Diego	City of San Diego	0
Orange	Orange Co WD	−40 to+15
Ventura	Oxnard Plain	
	Pressure Area	−9
	Nonpressure Area	−26
San Luis Obispo	Arroyo Grande	−3
	Nippomo	−4
Santa Barbara	Carpinteria	−17
	Santa Barbara	−3
	Santa Ynez	−3
	Santa Maria	−9

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