

Table 10. Data requirements for the MWD_MAIN base year 1980--*Continued*

Data requirements	1975	1980	1984	1987	1990	2000	2010
LANCASTER--Continued							
Required data-- <i>Continued</i>							
Commercial							
Employment by SIC or category employment	--	(²)					
Number of units							
Unit parameter							
Annual average water use (gal/d/unit)							
Base year marginal price (\$/Kgal)							
Industrial							
Employment by SIC or category description	--	(²)					
Category employment							
Annual average water use (gal/d/unit)							
Base year marginal price (\$/Kgal)							
Optional data							
Municipal							
Income by percent of range	--	(³)	--	--	--	--	--
Employment data by pairs (base year and 1975) by SIC groupings							
Public/unaccounted							
Distribution losses							
Resident population							
Annual average (gal/d)							
Free service							
Annual average (gal/d)							
User added public/unaccounted parameters							
Description							
Number of units							
Unit parameter							
Annual average (gal/d/unit)							
PALMDALE							
Required data							
Municipal							
Base year	--	1980	--	--	--	--	--
Total population	--	12,287	17,711	33,103	68,842	161,200	226,425
Median income	--	21,838	20,363	18,398	27,386	29,029	30,771
Total employment	5,358	7,081	6,400	10,000	16,075	34,104	51,621
CCI or alternate CCI	--	143.3	--	--	--	--	--
Rainfall, in inches	--	5.8	--	--	--	--	--
Maximum summer temperature	--	107	--	--	--	--	--
Cooling degree days	--	1,635	--	--	--	--	--
Residential							
Multifamily, housing by value range	--	(¹)	--	--	--	--	--
Multifamily, persons per unit	--	2.03	--	--	--	--	--
Multifamily, winter rate (\$/Kgal)	--	.53	--	--	--	--	--
Multifamily, summer rate (\$/Kgal)	--	.53	--	--	--	--	--
Single family, housing by range	--	(¹)	--	--	--	--	--
Single family, persons per unit	--	2.44	--	--	--	--	--
Single family, winter rate (\$/Kgal)	--	.53	--	--	--	--	--
Single family, summer rate (\$/Kgal)	--	.53	--	--	--	--	--

Footnotes at end of table.

Table 10. Data requirements for the MWD_MAIN base year 1980--*Continued*

Data requirements	1975	1980	1984	1987	1990	2000	2010
PALMDALE--Continued							
Commercial							
Employment by SIC or category employment	--	(²)					
Number of units							
Unit parameter							
Annual average water use (gal/d/unit)							
Base year marginal price (\$/Kgal)							
Industrial							
Employment by SIC or category description	--	(²)					
Category employment							
Annual average water use (gal/d/unit)							
Base year marginal price (\$/Kgal)							
Optional data							
Municipal							
Income by percent of range	--	(³)	--	--	--	--	--
Employment data by pairs (base year and 1975) by SIC groupings							
Public/unaccounted							
Distribution losses							
Resident population							
Annual average (gal/d)							
Free service							
Annual average (gal/d)							
User added public/unaccounted parameters							
Description							
Number of units							
Unit parameter							
Annual average (gal/d/unit)							
ANTELOPE VALLEY							
(using Lancaster housing value range distribution, weather information, and water rates)							
Required data							
Municipal							
Base year	--	1980	--	--	--	--	--
Total population	--	124,350	--	--	260,400	504,600	690,000
Median income	--	21,790	--	--	25,268	26,784	28,391
Total employment	50,051	58,865	--	--	143,564	472,877	347,200
CCI or alternate CCI	--	143.3	--	--	--	--	--
Rainfall, in inches	--	5.7	--	--	--	--	--
Maximum summer temperature	--	107	--	--	--	--	--
Cooling degree days	--	1,635	--	--	--	--	--
Residential							
Multifamily, housing by value range	--	(¹)	--	--	--	--	--
Multifamily, persons per unit	--	2.79	--	--	--	--	--
Multifamily, winter rate (\$/Kgal)	--	.44	--	--	--	--	--
Multifamily, summer rate (\$/Kgal)	--	.44	--	--	--	--	--
Single family, housing by range	--	(¹)	--	--	--	--	--
Single family, persons per unit	--	2.79	--	--	--	--	--
Single family, winter rate (\$/Kgal)	--	.56	--	--	--	--	--
Single family, summer rate (\$/Kgal)	--	.56	--	--	--	--	--

Footnotes at end of table.

PWS-0197-0052

Table 10. Data requirements for the MWD_MAIN base year 1980--*Continued*

Data requirements	1975	1980	1984	1987	1990	2000	2010
ANTELOPE VALLEY--<i>Continued</i>							
(using Lancaster housing value range distribution, weather information and water rates)							
Required data--<i>Continued</i>							
Commercial							
Employment by SIC or category employment	--	(²)					
Number of units							
Unit parameter							
Annual average water use (gal/d/unit)							
Base year marginal price (\$/Kgal)							
Industrial							
Employment by SIC or category description	--	(²)					
Category employment							
Annual average water use (gal/d/unit)							
Base year marginal price (\$/Kgal)							
Optional data							
Municipal							
Income by percent of range	--	(³)	--	--	--	--	--
Employment data by pairs (base year and 1975) by SIC groupings							
Public/unaccounted							
Distribution losses							
Resident population							
Annual average (gal/d)							
Free service							
Annual average (gal/d)							
User added public/unaccounted parameters							
Description							
Number of units							
Unit parameter							
Annual average (gal/d/unit)							

¹See tables 15 and 16.

²See table 13.

³See table 14.

conservation measures. Restricted-use demand forecasts were made for Lancaster, Palmdale, and the Antelope Valley on the basis that the same "best-management practices" for water-demand reduction were used for Antelope Valley as were used in Perris Valley, a similar desert area in California (Metropolitan Water District of Southern California, 1993). These model runs were produced only for reference because no "best-management practices" have been adopted for the study area.

Attempts to forecast water demands for the Antelope Valley area were made using information available for the cities of Lancaster and Palmdale (tables 10 and 11) for which water demand was

forecasted through the year 2010 (table 12).

Preliminary calibration and verification indicate that sufficient socioeconomic data presently (1994) are not available for the Antelope Valley to use the current forecasts from the MAIN system without extreme caution. Data are limited for employment (table 13), median income distributions (table 14), and housing statistics for single family (table 15) and multifamily (table 16) housing units.

Population data are available (table 17), but often are contradictory for the same year from different sources. Of the three forecasts made using the MAIN model, the Lancaster simulation contained the highest quality socioeconomic data available. The forecasts presented in table 12 indicate that the

Table 11. Data requirements by forecast method for MWD_MAIN forecast years 1984, 1987, 1990, 2000, and 2010 for Lancaster and Palmdale

[SIC, Standard Industrial Code; --, no data available]

Sources of data:

Population:

Antelope Valley: Marla Hambright, California Department of Water Resources (written commun., 1993).

Lancaster and Palmdale: City of Lancaster (1993); Javier Minjares, Southern California Association of Governments (written commun., 1993).

Employment:

Antelope Valley Board of Trade (1993); Javier Minjares, Southern California Association of Governments (written commun., 1993); Kern County Council of Governments (1991).

Income:

Antelope Valley: Alfred Gobar and Associates (1993); Eva Opitz, Planning and Management Consultants, Ltd. (oral commun., 1993).

Lancaster and Palmdale: Javier Minjares, Southern California Association of Governments (written commun., 1993); Kern County Council of Governments (1991).

Housing:

Antelope Valley: Alfred Gobar and Associates (1993).

Lancaster and Palmdale: Javier Minjares, Southern California Association of Governments (written commun., 1993); U.S. Department of Commerce (1990).

Data requirements by type of forecast method	1984	1987	1990	2000	2010
LANCASTER					
Internal growth					
Required data					
Total population	53,827	68,063	97,291	152,279	212,140
Median income	24,013	20,943	25,046	26,549	28,142
Total employment	15,195	23,240	42,039	63,217	83,320
Optional data					
Number of households	19,690	25,160	32,899	48,721	70,267
Percent household income groups	--	--	--	--	--
Employment by SIC	--	--	(¹)	--	--

Extrapolation of data for historical data base year must be entered for sector(s) to be generated and historical data must be entered.

Required data

Historical forecast option not used for this study

Residential

Historical years

Housing by subgroup

 Single family

 Multifamily

Housing, by value range

Commercial²

Historical years

Employment by SIC

(Must have base year data to use)

Industrial(²)

Historical years

Employment by SIC

(Must have base year data to use)

Optional data

Public/unaccounted

Enter historical population for distribution

Losses/free service for years specified

May enter historical parameter values for historical years chosen

See footnotes at end of table.

PWS-0197-0054

Table 11. Data requirements by forecast method for MWD_MAIN forecast years 1984, 1987, 1990, 2000, and 2010, for Lancaster and Palmdale--*Continued*

Data requirements by type of forecast method	1984	1987	1990	2000	2010
LANCASTER--Continued					
External projection	External projection option not used for this study				
Required data					
Residential					
Number of housing units by subgroup					
Single family	--	--	--	--	--
Multifamily	--	--	--	--	--
Commercial					
Employment by SIC	--	--	--	--	--
(Must have base year data to use)					
Category parameter	--	--	--	--	--
(if defined in base year)					
Industrial					
Employment by SIC	--	--	--	--	--
(Must have base year data to use)					
Optional data					
May be entered several ways: as a fractional percent of total municipal water use, as projected population for a per capita calculation, or as projected annual average losses in gallons per day.					
PALMDALE					
Internal growth					
Required data					
Total population	17,711	33,103	68,842	161,200	226,425
Median income	20,363	18,398	27,386	29,029	30,771
Total employment	6,400	10,000	16,075	34,104	51,621
Optional data					
Number of households	6,499	12,232	21,950	47,863	70,473
Percent household income groups	--	--	--	--	--
Employment by SIC	--	--	(1)	--	--
Extrapolation of historical data					
Base year data must have been entered for sector(s) to be generated.					
Must enter at least 2 historical years.					
Required data					
Residential					
Historical years					
Housing by subgroup					
Single family	--	--	--	--	--
Multifamily	--	--	--	--	--
Housing by value range	--	--	--	--	--
Commercial ²	--	--	--	--	--
Historical years	--	--	--	--	--
Employment by SIC	--	--	--	--	--
(Must have base year data to use)					
Industrial ²					
Historical years	--	--	--	--	--
Employment by SIC	--	--	--	--	--
(Must have base year data to use)					
Optional data	--	--	--	--	--
Public/unaccounted	--	--	--	--	--
Enter historical population for distribution					
Losses/free service for years specified					
May enter historical parameter values for historical years chosen					

See footnotes at end of table.

PWS-0197-0055

Table 11. Data requirements by forecast method for MWD_MAIN forecast years 1984, 1987, 1990, 2000, and 2010, for Lancaster and Palmdale--*Continued*

Data requirements by type of forecast method	1984	1987	1990	2000	2010
PALMDALE--Continued					
External projection	External projection option not used for this study				
Required data					
Residential					
Number of housing units by subgroup					
Single family	--	--	--	--	--
Multifamily	--	--	--	--	--
Commercial					
Employment by SIC	--	--	--	--	--
(Must have base year data to use)					
Category parameter	--	--	--	--	--
(if defined in base year)					
Industrial					
Employment by SIC	--	--	--	--	--
(Must have base year data to use)					
Optional data					
May be entered several ways: as a fractional percent of total municipal water use, as projected population for a per capita calculation, or as projected annual average losses in gallons per day.					
ANTELOPE VALLEY					
Internal growth					
Required data					
Total population	--	--	260,400	504,600	690,000
Median income	--	--	25,268	26,784	28,391
Total employment	--	--	143,564	472,877	347,200
Optional data					
Number of households	--	--	134,983	237,377	364,060
Percent household income groups	--	--	--	--	--
Employment by SIC	--	--	(¹)	--	--
Extrapolation of historical data					
Base year data must have been entered for sector(s) to be generated.					
Must enter at least 2 historical years.					
Required data	Historical forecast option not used for this study				
Residential					
Historical years					
Housing by subgroup					
Single family	--	--	--	--	--
Multifamily	--	--	--	--	--
Housing by value range	--	--	--	--	--
Commercial ²	--	--	--	--	--
Historical years	--	--	--	--	--
Employment by SIC	--	--	--	--	--
(Must have base year data to use)					
Industrial ²					
Historical years	--	--	--	--	--
Employment by SIC	--	--	--	--	--
(Must have base year data to use)					
Optional data	--	--	--	--	--
Public/unaccounted	--	--	--	--	--
Enter historical population for distribution					
Losses/free service for years specified					
May enter historical parameter values for historical years chosen					

See footnotes at end of table.

PWS-0197-0056

Table 11. Data requirements by forecast method for MWD_MAIN forecast years 1984, 1987, 1990, 2000, and 2010, for Lancaster and Palmdale--*Continued*

Data requirements by type of forecast method	1984	1987	1990	2000	2010
ANTELOPE VALLEY--Continued					
External Projection	External projection option not used for this study				
Required data					
Residential					
Number of housing units by subgroup					
Single family	--	--	--	--	--
Multifamily	--	--	--	--	--
Commercial					
Employment by SIC	--	--	--	--	--
(Must have base year data to use)					
Category parameter	--	--	--	--	--
(if defined in base year)					
Industrial					
Employment by SIC	--	--	--	--	--
(Must have base year data to use)					
Optional data					
May be entered several ways: as a fractional percent of total municipal water use, as projected population for a per capita calculation, or as projected annual average losses in gallons per day.					

¹See table 13.

²Must have base year information for this option.

reported water demands for 1990 account for about 70 to 77 percent of the simulated water demands forecasted under unrestricted and restricted scenarios. However, none of the water suppliers in the study area have adopted "best-management practices" for water conservation that were used in simulating our restricted water-demand projections. The differences between our present simulated and reported water demands for 1990 are expected to decrease as input data for the model systems are improved and as accuracy increases in accounting for actual water demands for Lancaster, Palmdale, and the entire Antelope Valley.

Assuming that growth in water demand and projected socioeconomic variables for Lancaster are representative of the Antelope Valley, total urban water demand in the Antelope Valley is projected (using the MAIN system) to increase from about 77,168 acre-ft (actual) in 1990 (table 12 and table 18 at back of report) to about 329,000 acre-ft in 2010 (table 12). More conservative projections can be derived using the ratios of increase in urban demand forecasted (table 12) between 1990 and 2010 for Lancaster or Palmdale. The ratio of increase for Lancaster is 2.08, determined from a reported water demand of 32,430 acre-ft in 1990 and a forecasted water demand of 67,490 acre-ft in 2010. The ratio of increase for Palmdale is 2.50, determined from a reported water demand of 23,950 acre-ft in 1990

and a forecasted water demand of 59,940 acre-ft in 2010. Using reported total water demand of 77,168 acre-ft/yr for all urban uses for the entire Antelope Valley in 1990 and these ratios, projected urban water demands for Lancaster and Palmdale would increase between 1990 and 2010 from 23,736 acre-ft to 49,371 acre-ft for Lancaster, from 17,192 acre-ft to 42,980 acre-ft for Palmdale, and from 77,168 acre-ft to between 160,500 and 192,920 acre-ft for the Antelope Valley. A more liberal projection for total demand for all urban uses can be derived by applying the ratio of increase between 1990 and 2010 for the entire Antelope Valley (109,910 in 1990 to about 329,000, or 2.99). Using this projection, urban water demand would increase from 77,168 acre-ft in 1990 to 230,732 acre-ft/yr by 2010.

This wide range of projected water demand (160,500 to 329,000 acre-ft) is indicative of the expected error associated with the present water-demand forecasts made using socioeconomic data currently available for the Antelope Valley. Management of local water resources is expected to be decided by members of the Antelope Valley Water Group (and other interested parties) on the basis of these projections, their best judgement, and their understanding of local conditions. In addition to potentially significant errors in population projections and other model parameters, other factors can

PWS-0197-0057

Table 12. Water-demand forecast for the Antelope Valley and the cities of Lancaster and Palmdale, 1980 to 2010

[Method used: These forecasts were developed using a version of the MWD_MAIN water-demand forecasting system supplied by the Metropolitan Water District of Southern California (1993) for the Perris Valley area. The Perris Valley system was modified to reflect conditions as they presently (1994) are known for the Antelope Valley. The assumption for the best-management practices are the same as were used for Perris Valley, California, by the Metropolitan Water District of southern California to create restricted-use estimates. This assumption was made because no best-management practices have been adopted in the Antelope Valley. USGS, U.S. Geological Survey; gal/d, gallons per day; acre-ft/yr, acre feet per year; --, no data available]

		Annual water-demand forecast				Reported water demand use (from table 18 and USGS data base)	
System run	Forecast year	Total unrestricted use		Total restricted use		(acre-ft/yr)	(percent ¹ of forecast)
		(gal/d)	(acre-ft/yr)	(gal/d)	(acre-ft/yr)		
ANTELOPE VALLEY ²							
1	1980	50,215	56,290	50,215	56,290	34,879	62
2	1990	98,044	109,910	95,886	107,490	77,168	70/72
3	2000	236,179	264,760	225,638	252,940	--	--
4	2010	293,246	328,730	278,367	312,050	--	--
LANCASTER							
1	1980	15,620	17,510	15,620	17,510	13,820	79
2	1990	28,932	32,430	27,325	30,630	23,736	73/77
3	2000	43,192	48,420	39,283	44,040	--	--
4	2010	60,203	67,490	52,147	59,350	--	--
PALMDALE							
1	1980	5,973	6,700	5,973	6,700	6,130	91
2	1990	21,362	23,950	20,169	22,610	17,192	72/76
3	2000	37,812	42,390	34,546	38,730	--	--
4	2010	53,467	59,940	47,137	52,840	--	--

¹Percent of forecasted demand that is accounted for in our data base (table 18). The difference between reported and forecasted could be due to incomplete reporting and/or unrefined forecast data for the Antelope Valley forecasts. Another potential source of error for the Lancaster and Palmdale forecasts occurs when determining the actual deliveries to each city by each water supplier when city and water boundaries are different.

²Housing values, water rates, and winter rainfall for Lancaster and the Antelope Valley.

affect future water demands, including construction of the proposed international airport and high-speed rail systems. Water-conservation options may be adopted along with other current best-management practices to help better manage future water demands in the Antelope Valley. Because estimated increases in water demand are relative to increases in population, most of the increase in water demand in the Antelope Valley is expected to be for urban uses. Population projections for 2010 show that the population, which was probably between 250,510 and 273,443 in 1990 according to available reports, could increase to 738,000 in 2010 and 986,000 by 2020, which represent increases of 295 and 394 percent, respectively (table 17).

Disaggregated Factor Forecasts

An alternative approach to MAIN system forecasts, which may be more appropriate in areas of limited data availability such as the Antelope Valley, is the Disaggregated Factor Forecast (DFF) method. The DFF is a simplified version of the MAIN system which can provide a sectoralized result. This method reportedly could be used on a simple spreadsheet or with a hand-held calculator. Advantages of this method include simplicity, ease in use, and fewer data requirements; the primary disadvantage is a loss in accuracy. Because of the anticipated loss in accuracy, this method has not yet been applied in the Antelope Valley. However,

Table 13. Employment data for the Antelope Valley by Standard Industrial Code (SIC)

[--, no data available]

Sources of data:

Employment by Standard Industrial Code (SIC):

Southern California Association of Governments (1993); Pete Smith, Kern County Council of Governments (written commun., 1993).

Total employment:

Southern California Association of Governments (1993); Alfred Gobar and Associates (1993).

Subcategory (code and name) or SIC	Lancaster			Palmdale			Los Angeles County		
	1975	1980	1990	1975	1980	1990	1975	1980	1990
C001 Miscellaneous commercial	--	3,397	5,988	--	1,019	2,371	--	6,353	10,916
C002 Vocational schools	--	524	1,091	--	120	272	--	880	1,512
C003 Miscellaneous retail	--	1,908	4,054	--	622	1,413	--	3,767	6,473
C004 Boarding houses	--	--	--	--	7	17	--	17	30
C005 Transportation terminals	--	--	--	--	--	--	--	1	2
C006 Laundries and cleaning	--	335	695	--	132	300	--	616	1,058
C007 Power laundries	--	--	--	--	4	8	--	5	8
C008 Landscaping services	--	51	171	--	7	16	--	78	143
C009 Miscellaneous wholesale	--	3,095	6,882	--	885	2,011	--	6,002	10,312
C010 Recreational facilities	--	4	8	--	2	4	--	3	53
C011 Food and other retail	--	1,261	2,655	--	414	942	--	2,347	4,033
C012 Art schools	--	7	15	--	1	3	--	10	18
C013 Hotels and restaurants	--	1,679	2,369	--	468	1,064	--	2,169	3,727
C014 Electric and gas utilities	--	31	66	--	54	122	--	120	206
C015 Public administration	--	3,602	7,503	--	4,446	10,151	--	5,923	10,177
C016 Schools and universities	--	1,256	2,616	--	4,400	10,000	--	3,047	5,236
C017 Racetracks	--	1	3	--	1	3	--	3	6
C018 Car washes and laboratories	--	122	253	--	12	27	--	191	329
C019 Health services	--	107	223	--	--	--	--	136	234
C020 Medical offices	--	2,038	3,605	--	134	304	--	2,266	3,893
C021 Nursing facilities	--	416	868	--	--	--	--	644	1,107
C022 Hospitals	--	1,279	2,644	--	189	202	--	1,680	2,866
C023 Botanical and zoological gardens	--	--	--	--	--	--	--	--	--
Manufacturing									
201	--	2	4	--	--	--	--	2	4
205	--	5	10	--	1	3	--	8	
208	--	26	55	--	7	15	--	41	70
209	--	1	3	--	--	--	--	2	3
222	--	--	--	--	--	--	--	--	--
233	--	--	--	--	--	--	--	--	--

Table 13. Employment data for the Antelope Valley by Standard Industrial Code (SIC)--*Continued*

Subcategory (code and name) or SIC	Lancaster			Palmdale			Los Angeles County		
	1975	1980	1990	1975	1980	1990	1975	1980	1990
<i>Manufacturing--Continued</i>									
239	--	1	1	--	--	--	--	1	1
242	--	1	2	--	--	--	--	25	47
243	--	10	19	--	1	3	--	12	22
245	--	--	--	--	--	--	--	18	35
249	--	5	10	--	--	--	--	8	14
251	--	18	38	--	--	--	--	22	38
254	--	2	5	--	5	12	--	12	20
259	--	14	29	--	--	--	--	20	35
265	--	27	56	--	25	56	--	65	112
271	--	32	66	--	93	212	--	162	278
272	--	5	11	--	--	--	--	6	11
273	--	--	--	--	1	1	--	2	3
274	--	26	55	--	--	--	--	32	55
275	--	52	108	--	28	62	--	105	171
279	--	--	--	--	--	--	--	2	3
281	--	1	2	--	--	--	--	1	2
282	--	1	2	--	--	--	--	1	2
283	--	1	3	--	--	--	--	2	3
286	--	--	--	--	--	--	--	4	4
289	--	--	--	--	--	--	--	--	--
291	--	--	--	--	3	6	--	3	6
306	--	--	--	--	--	--	--	1	2
308	--	9	19	--	5	12	--	19	33
323	--	5	11	--	--	--	--	9	15
324	--	--	--	--	--	--	--	61	105
325	--	3	6	--	--	--	--	3	6
326	--	--	--	--	1	3	--	2	3
327	--	36	76	--	26	60	--	80	138
328	--	4	9	--	--	--	--	--	5
329	--	--	--	--	--	--	--	--	--
333	--	--	--	--	--	--	--	--	--
336	--	11	22	--	--	--	--	13	22
343	--	--	--	--	--	--	--	87	150
344	--	36	76	--	12	27	--	57	98
345	--	1	3	--	--	--	--	13	21
347	--	11	24	--	6	14	--	25	42
348	--	1	2	--	--	--	--	1	2
349	--	--	--	--	--	--	--	--	--
351	--	--	--	--	3	6	--	3	6
354	--	6	15	--	4	9	--	20	34
355	--	1	1	--	5	11	--	9	15
356	--	6	13	--	--	--	--	15	26
358	--	1	1	--	--	--	--	5	9
359	--	32	66	--	18	42	--	159	258
362	--	--	--	--	2	5	--	19	34
364	--	3	7	--	--	--	--	4	7
365	--	--	--	--	--	--	--	--	--
367	--	11	23	--	1	2	--	14	25

PWS-0197-0060

Table 13. Employment data for the Antelope Valley by Standard Industrial Code (SIC)—*Continued*

Subcategory (code and name) or SIC	Lancaster			Palmdale			Los Angeles County		
	1975	1980	1990	1975	1980	1990	1975	1980	1990
<i>Manufacturing--Continued</i>									
369	--	1	2	--	--	--	--	1	2
371	--	6	13	--	3	7	--	16	27
372	--	385	803	--	95	216	--	4,733	8,133
373	--	--	--	--	--	--	--	524	901
375	--	--	--	--	--	--	--	--	--
381	--	--	--	--	3	6	--	3	6
382	--	6	12	--	--	--	--	14	23
386	--	1	2	--	--	--	--	1	2
387	--	--	--	--	3	7	--	4	7
391	--	1	3	--	1	2	--	3	5
393	--	1	2	--	--	--	--	3	6
394	--	2	4	--	--	--	--	--	--
395	--	3	6	--	1	1	--	7	12
399	--	148	340	--	154	347	--	97	167
Total employment by subcategory or SIC	--	22,074	43,749	--	13,424	30,377	--	42,839	73,625
Total employment	15,516	14,808	42,039	5,358	7,081	16,075	42,055	50,500	131,715

Subcategory (code and name) or SIC	Kern County			Antelope Valley		
	1975	1980	1990	1975	1980	1990
C001 Miscellaneous commercial	--	1,990	3,420	--	8,253	14,336
C002 Vocational schools	--	73	125	--	161	1,637
C003 Miscellaneous retail	--	222	382	--	3,989	6,855
C004 Boarding houses	--	3	6	--	20	36
C005 Transportation terminals	--	31	53	--	32	55
C006 Laundries and cleaning	--	16	28	--	632	1,086
C007 Power laundries	--	7	12	--	12	20
C008 Landscaping services	--	2	3	--	80	146
C009 Miscellaneous wholesale	--	194	334	--	6,336	10,646
C010 Recreational facilities	--	--	--	--	31	53
C011 Food and other retail	--	280	481	--	2,627	4,514
C012 Art schools	--	--	--	--	10	18
C013 Hotels and restaurants	--	315	542	--	2,484	4,269
C014 Electric and gas utilities	--	38	66	--	158	272
C015 Public administration	--	164	281	--	6,087	10,458
C016 Schools and universities	--	410	705	--	3,457	5,941
C017 Racetracks	--	1	2	--	4	8
C018 Car washes and laboratories	--	17	29	--	208	358

PWS-0197-0061

Table 13. Employment data for the Antelope Valley by Standard Industrial Code (SIC)--*Continued*

Subcategory (code and name) or SIC	Kern County			Antelope Valley		
	1975	1980	1990	1975	1980	1990
C019 Health services	--	--	--	--	136	234
C020 Medical offices	--	12	20	--	2,278	3,913
C021 Nursing facilities	--	--	--	--	644	1,107
C022 Hospitals	--	--	--	--	1,680	2,866
C023 Botanical and zoological gardens	--	--	--	--	--	--
Manufacturing						
201	--	--	--	--	2	4
205	--	--	--	--	8	13
208	--	--	--	--	41	70
209	--	--	--	--	2	3
222	--	6	10	--	6	10
233	--	1	1	--	1	1
239	--	--	--	--	1	1
242	--	--	--	--	25	47
243	--	16	27	--	32	50
245	--	--	--	--	18	35
249	--	2	3	--	10	17
251	--	--	--	--	22	38
254	--	--	--	--	12	20
259	--	--	--	--	20	35
265	--	--	--	--	65	112
271	--	1	2	--	163	280
272	--	--	--	--	6	11
273	--	--	--	--	2	3
274	--	--	--	--	32	55
275	--	2	3	--	107	183
279	--	1	1	--	3	4
281	--	582	1,000	--	583	1,002
282	--	--	--	--	1	2
283	--	--	--	--	2	3
286	--	--	--	--	4	4
289	--	2	3	--	2	3
291	--	--	--	--	3	6
306	--	--	--	--	1	2
308	--	--	--	--	19	33
323	--	--	--	--	9	15
324	--	99	170	--	160	275
325	--	--	--	--	3	6
326	--	--	--	--	2	3
327	--	--	--	--	80	138
328	--	--	--	--	5	8
329	--	12	20	--	12	20
333	--	12	21	--	12	21
336	--	--	--	--	13	22
343	--	--	--	--	87	150
344	--	--	--	--	57	98
345	--	--	--	--	13	21
347	--	--	--	--	25	42

PWS-0197-0062

Table 13. Employment data for the Antelope Valley by Standard Industrial Code (SIC)—*Continued*

Subcategory (code and name) or SIC	Kern County			Antelope Valley		
	1975	1980	1990	1975	1980	1990
Manufacturing--Continued						
348	--	--	--	--	1	2
349	--	3	5	--	3	5
351	--	--	--	--	3	6
354	--	--	--	--	20	34
355	--	--	--	--	9	15
356	--	--	--	--	15	26
358	--	--	--	--	5	9
359	--	57	98	--	207	356
362	--	--	--	--	19	34
364	--	--	--	--	4	7
365	--	2	3	--	2	3
367	--	--	--	--	14	25
369	--	10	17	--	11	19
371	--	43	74	--	55	101
372	--	121	207	--	4,854	8,340
373	--	--	--	--	524	901
375	--	2	4	--	2	4
381	--	--	--	--	3	6
382	--	29	50	--	43	73
386	--	--	--	--	1	2
387	--	--	--	--	4	7
391	--	--	--	--	3	5
393	--	--	--	--	3	6
394	--	47	80	--	47	80
395	--	--	--	--	7	12
399	--	--	--	--	97	167
Total employment						
by subcategory or SIC	--	4,825	8,288	--	46,946	81,939
Total employment	7,996	8,365	11,849	50,051	58,865	143,564

now that interim forecasts have been made with the MAIN systems, it may be valuable during the next iteration of forecasting to see how close the estimate might be if this method is used.

Forecasts for Military Installations

The interim water-demand forecasts made in this report for the Antelope Valley using the MWD-MAIN system have included Edwards Air Force Base in the public-supplied category. This inclusion is justified because Edwards Air Force Base is a licensed public water supplier. However, water-demand forecasts for military installations are not adequate when using the MAIN system because MAIN requires Standard Industrial Classifications, which are not available for military base activities.

The need for water-supply planning at military installations resulted in the development of a specialized system called IWRAPS (Installation Water Resources and Planning System) that can produce water-demand forecasts for military installations during peacetime and mobilization scenarios. IWRAPS is based on parameters that are available for military bases, such as square footage of installations, weather, and irrigated acreage. This system was developed by Planning and Management Consultants, Ltd., under contract to the U.S. Army Corps of Engineers. IWRAPS is based on information that identifies areas of specific water use at a military installation by specific function, which is based on the mission of the installation. A new version of IWRAPS, developed specifically for air force bases, was successfully applied at Vandenberg Air Force Base in Santa Barbara

PWS-0197-0063

Table 14. Median income distribution for the Antelope Valley

[--, no data available]

Sources of data:

Income: Javier Minjares, Southern California Association of Governments (written commun., 1993) for Lancaster and Palmdale incomes in 1980, 1984, 1987, and 1990; Alfred Gobar and Associates (1993) for Antelope Valley incomes in 1980 and 1990. Eva Opitz, Planning and Management Consultants, Ltd. (written commun., 1993) for 2000 and 2010. Consumer Price Index, for the Los Angeles/Long Beach area, Frank Nion, Southern California Association of Governments (written commun., 1993). All reported income figures were adjusted to 1980 dollar values using the Consumer Price Index for the Los Angeles/Long Beach area (Javier Minjares, Southern California Association of Governments, written commun., 1993). Income forecasts were projected using a 6-percent increase per 10-year period, which is consistent with income forecasts for Los Angeles County used in the MAIN systems from Metropolitan Water District of Southern California (Eva Opitz, Planning and Management Consultants, Ltd., oral commun., 1993). Income distributions for 1980, U.S. Department of Commerce (1980) for Lancaster and Palmdale and Alfred Gobar and Associates (1993) for the Antelope Valley.

Associates (1995) for the Antelope Valley.				
Location	Median income	Income, in percent		
		\$0-\$10,000	\$10,000-\$20,000	\$20,000-\$30,000
Base year 1980				
Lancaster	\$24,499	22	27	24
Palmdale	21,838	26	26	25
Antelope Valley	21,790	25	28.1	25.4
Forecast years				
1984				
Lancaster	\$24,013	--	--	--
Palmdale	20,363	--	--	--
Antelope Valley	--	--	--	--
1987				
Lancaster	\$20,943	--	--	--
Palmdale	18,398	--	--	--
Antelope Valley	--	--	--	--
1990				
Lancaster	\$25,046	--	--	--
Palmdale	27,386	--	--	--
Antelope Valley	25,268	--	--	--
2000				
Lancaster	\$26,549	--	--	--
Palmdale	29,029	--	--	--
Antelope Valley	26,784	--	--	--
2010				
Lancaster	\$28,142	--	--	--
Palmdale	30,771	--	--	--
Antelope Valley	28,391	--	--	--

PWS-0197-0064

Table 15. Housing statistics for single-family housing in the Antelope Valley**Sources of data:****Housing by value ranges:** U.S. Department of Commerce (1980).**Total single-family housing:**

Lancaster and Palmdale: Javier Minjares, Southern California Association of Governments (written commun., 1993).

Antelope Valley: Alfred Gobar and Associates (1993).

Persons per household:

Lancaster and Palmdale: Persons per owner occupied total, U.S. Department of Commerce (1980, 1990).

Antelope Valley: Alfred Gobar and Associates (1993).

Forecast year projections:

Lancaster and Palmdale: Javier Minjares, Southern California Association of Governments (written commun., 1993).

Value range (in \$100's)	Number of houses in each value range			
	Lancaster	Palmdale	Antelope Valley	
			Forecast 1 (Lancaster)	Forecast 2 (Palmdale)
Base year 1980				
0 - 99.99	59	4	235	94
100.00 - 149.99	69	16	273	303
150.00 - 199.99	137	42	538	505
200.00 - 249.99	227	74	894	1,334
250.00 - 299.99	189	41	742	742
300.00 - 340.99	314	54	1,232	973
350.00 - 399.99	304	105	1,192	1,880
400.00 - 499.99	1,330	414	5,216	7,329
500.00 - 599.99	2,973	834	11,645	13,403
600.00 - 799.99	5,249	1,164	20,553	13,404
800.00 - 999.99	2,089	277	8,179	13,454
1,000.00 - 1,499.99	1,202	106	4,707	1,903
1,500.00 - 1,999.99	190	36	696	511
2,000.00 - 4,000.00	62	19	245	511
Total	14,394	3,186	56,347	56,346
Persons per household	2.4	2.44	2.79	2.79
Forecast years 1984, 1987, 1990, 2000, and 2010				
1984 total	15,950	4,147		
1987 total	20,337	8,043		
1990 total	23,882	16,760		
2000 total	34,216	36,329		
2010 total	47,845	51,666		

County, California. This system has a great deal of potential for application at Edwards Air Force Base in the Antelope Valley. When this system is

implemented for Edwards Air Force Base, IWRAPS is expected to improve and enhance the overall water-demand forecast for the Antelope Valley.

Table 16. Housing statistics for multifamily housing in the Antelope Valley

Sources of data:

Housing by value ranges: U.S. Department of Commerce (1980, 1990).**Total multifamily housing:**

Lancaster and Palmdale: Javier Minjares, Southern California Association of Governments (written commun., 1993). Antelope Valley: Alfred Gobar and Associates (1993).

Persons per household:

Lancaster and Palmdale: Persons per renter occupied total, U.S. Department of Commerce (1980).

Antelope Valley: Alfred Gobar and Associates (1993).

Forecast year projections:

Lancaster and Palmdale: Javier Minjares, Southern California Association of Governments (written commun., 1993).

Value range (in \$100's)	Number of houses in each value range			
	Lancaster	Palmdale	Antelope Valley	
			Forecast 1 (Lancaster)	Forecast 2 (Palmdale)
Base year 1980				
0 - 119.99	68	64	266	493
120.00 - 148.49	93	62	363	482
148.50 - 223.49	199	78	776	611
223.50 - 298.48	269	119	1,051	927
298.49 - 373.48	449	213	1,753	1,654
373.49 - 448.47	431	286	1,677	2,227
448.48 - 523.47	428	269	1,671	2,087
523.48 - 598.46	340	203	1,326	1,584
598.47 - 700.00	640	169	2,495	1,313
Total	2,917	1,463	11,378	11,378
Persons per household	4.1	2.03	2.79	2.79
Forecast years 1984, 1987, 1990, 2000, and 2010				
1984 total	3,740	2,352		
1987 total	4,823	4,189		
1990 total	9,017	5,191		
2000 total	14,505	11,534		
2010 total	22,422	18,807		

Table 17. Antelope Valley population projections as reported by various agencies

[--, no data available]

Sources of data:

AGA, Alfred Gobar and Associates (1993).

AV PSA, California Department of Water Resources (1980; 1993b) projections for the Antelope Valley Planning Subarea.

C, U.S. Department of Commerce (1960; 1970; 1980; 1990).

DF, California Department of Finance (1992).

DWR, Marla Hambricht, California Department of Water Resources (written commun., 1993).

EDC, Vern Lawson, Lancaster Economic Development Corporation (written commun., 1993).

KC, Kern County.

KCG, Kern County Council of Governments (1990).

LAC, Ramon Gonzales, Los Angeles County Department of Public Works (written commun., 1993).

SCAG, Southern California Association of Governments (1993).

Year	Source	Lancaster	Palmdale	Antelope Valley, Kern County only	Antelope Valley total	Antelope Valley "Planning Subarea"	Antelope Valley "Detailed Analyses Units"	
							Los Angeles County	Kern County
1950	EDC	10,250	--	--	16,084	--	--	--
1960	DWR	26,012	11,522	--	--	79,640	62,620	17,020
1960	C	26,012	--	--	--	--	--	--
1960	EDC	26,012	7,121	--	68,170	--	--	--
1970	C	30,948	--	--	--	--	--	--
1970	DWR ¹	38,582	8,511	--	--	--	--	--
1970	DWR	30,948	8,511	--	--	97,832	77,452	20,380
1970	EDC	30,948	--	--	82,771	--	--	--
1970	LAC	--	8,511	--	--	--	--	--
1972	DWR ¹	--	--	--	--	99,100	--	--
1975	DWR	--	--	--	95,000	--	--	--
1975	LAC	--	9,736	--	--	--	--	--
1980	C	48,027	12,277	--	--	--	--	--
1980	DF	48,027	12,277	--	--	--	--	--
1980	DWR	48,027	12,277	--	--	² 124,350	103,200	21,150
1980	EDC	48,027	--	--	111,294	--	--	--
1980	AGA	48,027	12,277	--	122,879	--	--	--
1980	SCAG	² 48,103	² 12,287	--	--	--	--	--
1980	KCG	--	--	12,124	--	--	--	--
1981	DF	50,065	13,629	--	--	--	--	--
1982	DF	52,646	15,515	--	--	--	--	--
1983	DF	54,859	17,368	--	--	--	--	--
1984	DF	57,852	19,911	--	--	--	--	--
1984	SCAG	² 53,827	² 17,711	--	--	--	--	--
1985	DF	60,866	23,593	--	--	--	--	--
1986	DF	65,840	27,440	--	--	--	--	--
1987	DF	74,091	37,873	--	--	--	--	--
1987	DWR ¹	68,000	33,000	--	--	149,510	--	--
1987	SCAG	² 68,063	² 33,103	--	--	--	--	--
1988	DF	81,135	44,494	--	--	--	--	--

Footnotes at end of table.

Table 17. Antelope Valley population projections as reported by various agencies--*Continued*

Year	Source	Lancaster	Palmdale	Antelope Valley, Kern County only	Antelope Valley total	Antelope Valley "Planning Subarea"	Antelope Valley "Detailed Analyses Units"	
							Los Angeles County	Kern County
1989	DF	89,216	51,730	--	--	--	--	--
1989	EDC	82,182	45,859	--	--	224,230	--	--
1990	DF	97,291	68,842	24,035	--	--	--	--
1990	DWR	97,291	54,720	--	--	² 260,400	234,100	26,300
1990	EDC	88,700	56,500	--	250,510	--	--	--
1990	AGA	97,291	68,389	--	273,443	--	--	--
1990	SCAG	² 97,291	² 68,842	--	--	--	--	--
1990	KCG	--	--	23,806	--	--	--	--
1991	EDC	102,026	--	--	270,000	--	--	--
1992	EDC	104,700	--	--	282,500	--	--	--
1993	AGA	140,412	110,590	35,363	309,528	--	--	--
1995	EDC	120,000	--	--	314,500	--	--	--
1995	KGG	--	--	29,640	--	--	--	--
1998	AGA	165,472	138,132	38,553	369,913	--	--	--
2000	DF	--	--	53,008	--	--	--	--
2000	KCG	--	--	36,650	--	--	--	--
2000	DWR	--	--	--	--	² 504,600	465,000	39,600
2000	DWR ³	--	--	--	499,000	--	--	--
2000	SCAG	² 152,279	² 161,200	--	--	--	--	--
2005	KCG	--	--	45,268	--	--	--	--
2010	DF	--	--	--	690,000	--	--	--
2010	DWR	--	--	--	--	² 690,000	633,800	56,200
2010	DWR ³	--	--	--	738,000	--	--	--
2010	KCG	--	--	53,132	--	--	--	--
2010	SCAG	² 212,140	² 226,425	--	--	--	--	--
2015	KCG	--	--	64,866	--	--	--	--
2020	DF	--	--	--	812,000	--	--	--
2020	DWR	--	--	--	--	811,900	744,700	76,200
2020	DWR ³	--	--	--	986,000	--	--	--
2020	KCG	--	--	73,296	--	--	--	--

¹California Department of Water Resources (1990b, p. 13).

²Data used in the MWD_MAIN model.

³California Department of Water Resources (1993a, p. 250).

DATA-BASE DEVELOPMENT AND ANNUAL UPDATE PROCEDURE

The data base for this study was compiled using ARC/INFO, a geographic information system, and Quatro Pro, a spreadsheet software. Site-specific and aggregated water-supply, land-use, socioeconomic, and demographic data make up the data base.

Data from various water agencies were obtained in computer-readable format or were entered

manually if computer-readable versions were not available or were incompatible with software used for this study. Computerized data were available from Antelope Valley-East Kern Water Agency, California State Water Resources Control Board, Metropolitan Water District of Southern California, Palmdale Water District, and the Southern California Association of Governments.

An annual update procedure could include contacting each water supplier, as well as the State Water Resources Control Board, for the most recent

data for a calendar year. Annual updates to this data base would be greatly facilitated if each of the agencies supplying water in the valley used a common format for data storage or stored the same basic information in their data systems. A more formal agreement could be established with each water supplier and major water user to supply their annual updates as they become available. An annual review of the list of water suppliers and users would be needed to improve confidence in the adequacy of the data, and users might need to be added or removed each year.

WATER-RESOURCES MANAGEMENT CONSIDERATIONS

Demands on available water supplies for the Antelope Valley were reported to be 127,361 acre-ft in 1991 and, on the basis of recent forecasts, are projected to be between 127,000 and about 329,000 (tables 2 and 12) acre-ft by 2010. In 1991, reported water demands in the valley totaled about 127,361 acre-ft: 91,743 acre-ft came from ground-water supplies; 27,396 acre-ft came from imported surface-water supplies; 1,669 acre-ft came from local surface-water supplies; and 6,553 acre-ft came from reclaimed wastewater supplies (table 2). Imported water from the State Water Project normally would have been a larger percentage of the total supply, but the availability of that water was severely affected by the 1987-92 drought. Additional ground water was used to meet the demand.

The ground-water system in the Antelope Valley is a naturally stable, long-term, but finite source of water. Average ground-water recharge is estimated to be about 40,000 to 58,000 acre-ft/yr (Snyder, 1955; Bloyd, 1967; Durbin, 1978). When ground-water use exceeds replenishment, water levels decline and the source becomes depleted. Ground water in the Antelope Valley was depleted extensively during the peak agricultural period of the 1950's. Ground-water depletion in recent years can be estimated on the basis of ground-water pumpage data presented in figure 10 (assuming the true value for 1988 is the average of 1987 and 1989). Assuming that recharge averaged 40,000 to 58,000 acre-ft/yr, the average rate of ground-water depletion from 1983 to 1991 would have been about 8,000 to 26,000 acre-ft/yr. Recharge may have been less than the annual long-term average during that period because of below average precipitation (fig. 2) and related surface runoff

during the drought. Ground-water depletion during 1983-91, therefore, could have been greater than that estimated above.

Adverse consequences of ground-water-level declines include increased pumping lifts, reduced well efficiency, and the potential for aquifer-system compaction and associated land subsidence that can result in damage to public infrastructures. The economic effects of increased pumping lifts and reduced well efficiency include increased power requirements to pump the same volume of water and the eventual need for deeper wells as water levels approach the bottom of existing screened intervals. Economic and environmental effects of aquifer-system compaction and associated land subsidence in the Antelope Valley include fissures, sinkholes, broken well casings, decreased hydraulic head in the aquifer system, and unstable vertical datum, which is used for constructing drainage and flood-control structures. Additional potential effects caused by subsidence include insurance and legal implications, flood-control problems, and damage to structures, transportation facilities, and agricultural land. Maximum measured land subsidence was 6.0 ft from 1926-92, with about 4.7 ft occurring after 1957 (Ikehara and Phillips, 1994, table 8).

Management of water supply and water demand (including conservation of available water resources) is becoming an increasingly popular option available to water-resource managers. Recent efforts throughout the arid west have indicated that great water savings are possible when best-management practices are used. Currently (1994), no water suppliers in the Antelope Valley have adopted local best-management water-conservation practices.

Blomquist (1992) writes "Groundwater basin management represents a deliberate effort to derive greater benefits from the use of this resource while avoiding its depletion and the associated human welfare costs." A deliberate management effort is needed to meet future water demands in the Antelope Valley without incurring the economic and environmental costs associated with overuse of the ground-water resource. Part of this effort could involve the conjunctive use of surface and ground water. When available, excess local or imported surface water can be stored underground for use during periods of peak demand, such as in 1991 when imported water supplies were severely reduced. The managed, conjunctive use of surface and ground water can serve to meet demands during

periods of drought and to mitigate land subsidence and other potential adverse effects of ground-water-storage depletion.

Some water suppliers in the Antelope Valley have adopted a conjunctive-use practice called the "in lieu of pumping" program as documented by the California Department of Water Resources (1980). This program involves the use of imported surface water in addition to (or instead of) ground-water pumpage. The net result is less ground water pumped within the valley. Ground-water pumpage still could continue to increase but at a lower rate than if ground water were the sole water source (fig. 8).

Efficient capture, storage, and management of local surface water, imported surface water, and reclaimed wastewater would be an integral part of a conjunctive-use program in the Antelope Valley. With the exception of reclaimed wastewater, the volume of water available from these sources is highly variable—minimal during periods of drought and abundant during storms or years of above average precipitation. The ability to capture or obtain and store water from these sources when it is available is limited by economic and physical factors. These factors include the costs and feasibility of building and maintaining facilities to capture, store, and treat these water resources.

SUMMARY AND CONCLUSIONS

Land use and water use in the Antelope Valley, California, have varied significantly since development of the valley began in the late 1800's. Ground water has been a major source of water supply in this area because of limited local surface-water resources. Completion of the California Aqueduct to this area in the early 1970's imported water from the Sacramento-San Joaquin Delta, about 400 mi to the north. Estimates of ground-water pumpage, which previously have been published, increased from about 29,000 acre-ft in 1919 to about 400,000 acre-ft in the 1950's. Declines in ground-water levels and increased costs for electrical power in the 1970's decreased the quantity of ground water pumped annually for irrigation uses. Total annual reported ground-water pumpage decreased to about 53,200 acre-ft in 1983 and increased to about 91,700 acre-ft in 1991 as a result of the 1987-92 drought. Rapid urban

development, coincidental with several years of drought, renewed concerns about a possible return to extensive ground-water-storage depletion and increased land subsidence. In 1992-93, a water-use survey was done in the Antelope Valley to identify current and historical quantities of water use.

Forecasts in this report indicate that increased water demands will continue with continued urban development. These forecasts are based on projections of population growth and other socioeconomic variables provided by various agencies. Although the availability of socioeconomic data is limited and many sources of error are inherent in the forecasting process, preliminary results indicate that water demands could increase from 127,361 acre-ft in 1991 to between 127,000 and about 329,000 acre-ft by 2010. Various forecasting options are identified. The reliability of forecasting results for the Antelope Valley is controlled by the availability of input data needed for the forecasting method selected and data on actual water demands. The level of detailed information needed to make decisions on local water-resources management is expected to be made by members of the Antelope Valley Water Group and other interested parties. Potential water-resource management actions for the Antelope Valley include (1) increasing artificial ground-water recharge when excess local runoff (or imported water supplies) are available, (2) implementing water-conservation best-management practices, and (3) optimizing ground-water pumpage and conjunctive-use throughout the basin.

References Cited

- Aerial Information Systems, 1992, Southern California, 1990 Aerial land use study, land use level III/IV classification "long version": Aerial Information Systems report for the Los Angeles County Department of Regional Planning, 41 p.
- Alfred Gobar and Associates, 1993, Antelope Valley labor market study: Placentia, Calif., 111 p.
- Anderson, J.R., Hardy, E.E., Roach, J.T., and Witmer, R.E., 1976, A land use and land cover classification system for use with remote sensor data: U.S. Geological Survey Professional Paper 964, 28 p.
- Antelope Valley Board of Trade, 1993, Antelope Valley the competitive edge: A demographic and economic study of north Los Angeles and East Kern Counties: Lancaster, Calif., Antelope Valley Board of Trade, unpaginated.

PWS-0197-0070

- Blodgett, J.C., and Nasser, Iraj, 1993, Selected precipitation characteristics in Antelope Valley, Mojave Desert, California, in Kuo, C.Y., ed., Engineering hydrology--Proceedings of the symposium, San Francisco, July 25-30, 1993: New York, American Society of Civil Engineers, p. 7-12.
- Blomquist, W.A., 1992, Dividing the water--Governing ground water in Southern California: San Francisco, International Center for Self-Governance Press, 415 p.
- Bloyd, R.M., Jr., 1967, Water resources of the Antelope Valley-East Kern Water Agency area, California: U.S. Geological Survey Open-File Report, 69 p.
- California Department of Finance, 1992, California annual population and housing data April 1, 1980, to April 1, 1990, for cities, counties, and the State: California Department of Finance Report E-8090, p. 59-88.
- _____, 1993, Population projections by race/ethnicity for California and its counties, 1990-2040: California Department of Finance Report 93-1, unpaginated.
- California Department of Public Works, 1955, Memorandum report on water conditions in Antelope Valley: Division of Water Resources, 27 p.
- California Department of Water Resources, 1958, Desert areas of southeastern California land and water use survey, 1958: California Department of Water Resources Bulletin 101, 74 p.
- _____, 1965, Southern Lahontan area land and water use survey, 1961: California Department of Water Resources Bulletin 121, 77 p.
- _____, 1974, Desert area land and water use survey, 1972: Southern District Report, 22 p.
- _____, 1977, The California State Water Project--1976 Activities and future management plans: California Department of Water Resources Bulletin 132-77, 207 p.
- _____, 1980, Planned utilization of water resources in Antelope Valley: Southern District, 70 p.
- _____, 1983, The California water plan, projected use and available water supplies to 2010: California Department of Water Resources Bulletin 160-83, 268 p.
- _____, 1985, Management of the California State Water Project: California Department of Water Resources Bulletin 132-85, 269 p.
- _____, 1987, California Water, looking to the future: California Department of Water Resources Bulletin 160-87, 122 p.
- _____, 1988, Memorandum report--Additional information for Bulletin 160-87: 85 p.
- _____, 1990a, 1988 Annual water use--Water supply balances: Memorandum Report, 59 p.
- _____, 1990b, South Lahontan and northern Colorado Desert land use survey, 1987: Southern District, 49 p.
- _____, 1991a, Management of the California State Water Project: California Department of Water Resources Bulletin 132-91, 320 p.
- California Department of Water Resources, 1991b, 1989 Annual water use--Water supply balances: Memorandum Report, 28 p.
- _____, 1993a, California water plan update: California Department of Water Resources Bulletin 160-93 (draft), v. 1, 401 p., v. 2, 347 p.
- _____, 1993b, Diskette containing demographic information for the State of California: Sacramento, Calif. (Diskette available from Marla Hambricht, California Department of Water Resources, 1416 Ninth Street, Sacramento, California 95814).
- California State Water Resources Control Board, 1977, Regulations and information pertaining to appropriations of water in California: In Administrative Code, Title 23, Waters, chap. 3: State Water Resources Control Board, Subchapter 1, General Provisions; Subchapter 2, Appropriation of Water, 74 p.
- Cameron, T.A., Coffin, Lisa, and Mandapati, Bharati, 1993, User's guide, BMP water savings simulation program, version 2.2: Los Angeles, University of California, 58 p., 3 appendices.
- City of Lancaster, 1993, Demographic information: Lancaster, Calif., Department of Community Development.
- Davis, W.Y., Rodrigo, D.M., Opitz, E.M., Dziegielewski, Benedyct, and Boland, J.J., 1991, IWR_MAIN water use forecasting system, Version 5.1--User's manual and system description: U.S. Army Corps of Engineers, Institute for Water Resources, IWR Report 88-R-6.
- Duell, L.F.W., Jr., 1987, Geohydrology of the Antelope Valley area, California, and design for a ground-water-quality monitoring network: U.S. Geological Survey Water-Resources Investigations Report 84-4081, 72 p.
- Durbin, T.J., 1978, Calibration of a mathematical model of the Antelope Valley ground-water basin, California: U.S. Geological Survey Water-Supply Paper 2046, 51 p.
- Ewing, P.A., 1945, The irrigation development of Antelope Valley, California: U.S. Department of Agriculture, Soil Conservation Service, Division of Irrigation.
- Holland, T.W., and Baker, N.T., 1993, Evaluation of pumpage data furnished by selected public water suppliers in Arkansas, May 1990 through March 1991: U.S. Geological Survey Water-Resources Investigations Report 93-4104, 80 p.
- Ikehara, M.E., and Phillips, S.P., 1994, Determination of land subsidence related to ground-water-level declines using global positioning system and leveling surveys in Antelope Valley, Los Angeles, and Kern Counties, California, 1992: U.S. Geological Survey Water-Resources Investigations Report 94-4184, 101 p.
- Johnson, H.R., 1911, Water resources of Antelope Valley, California: U.S. Geological Survey Water-Supply Paper 278, 92 p.

- Kenny, J.F., 1986, Water demands in Kansas, 1944-84: U.S. Geological Survey Water-Resources Investigations Report 86-4038, 17 p.
- Kern County Council of Governments, 1990, Computer file, Traffic analysis zones: Bakersfield, Calif. [Computer report available from Kern County Council of Governments, Bakersfield, CA 93301].
- _____, 1991, Employees by Zip/SIC code for Antelope Valley in East Kern: Bakersfield, Calif., p. 1-6.
- Law Environmental, 1991, Water supply evaluation, Antelope Valley, California: Palmdale Water District, 49 p., 4 appendices.
- Los Angeles County Department of Public Works, 1991, Report on Lancaster Coalition of Neighborhood Organizations concerns with the Antelope Valley water supply: Michael D. Antonovich, Los Angeles County Board of Supervisors, 15 p.
- Mann, J.F., Jr., 1989, Status report on the ground water resources near the Palmdale Regional Airport: Consultants report prepared for and in the files of the Los Angeles County, Department of Public Works, 36 p.
- Metropolitan Water District of Southern California, 1993, Magnetic tape files containing water use information for the Metropolitan Water District's service area: [Computer tape available from Metropolitan Water District of Southern California, Los Angeles CA 90012].
- National Oceanic and Atmospheric Administration, 1991, Station history listing, accumulation of 16 years of climatic data from 1974-1990, for Palmdale Flight Service Station, Lancaster State Highway, and Mojave, Temperature data 1974-1987, Rainfall data 1980-1990, Cooling degree data 1974-87: Asheville, N.C. [Computer tape available from U.S. Department of Commerce, National Climatic Data Center, Asheville, NC 28801-2696].
- Rantz, S.E., 1969, Mean annual precipitation in the California region: U.S. Geological Survey Open-File Report, 2 sheets, scale 1:1,000,000.
- Snyder, J.H., 1955, Ground water in California, the experience of Antelope Valley: University of California Berkeley, Giannini Foundation Ground Water Studies No. 2, 156 p.
- Southern California Association of Governments, 1993, Magnetic tape containing socioeconomic data of Southern California Association of Governments members: Los Angeles, Calif. [Computer tape available from Southern California Association of Governments, Los Angeles, CA 90017].
- Suzuki, H.E., 1987, Feasibility report for proposed domestic water system improvements, additional sources of water supply, distribution and supply means, additions and replacements, water storage facilities: Application for loan from California Department of Water Resources, under the Davis-Grounsky Act.
- Templin, W.E., and Schluter, R.C., 1990, A water-resources data-network evaluation for Monterey County, California. Phase 3. Northern Salinas River Drainage basin: U.S. Geological Survey Water-Resources Investigations Report 89-4123, 96 p.
- Thompson, J.G., Parker, Michael, Templin, W.E., and Reynolds, R.R., Jr., 1993, A review of applications issues of the Metropolitan Water District-MAIN water forecasting systems: Water Resources Bulletin, v. 29, no. 3, p. 425-433.
- U.S. Department of Commerce, 1960, Census of population and housing: Washington, D.C., Bureau of the Census, p. 27.
- _____, 1970, Census of population and housing: Washington, D.C., Bureau of the Census, Table P1, p. 3, Table P3, p. 273.
- _____, 1980, Census of population and housing: Washington, D.C., Bureau of the Census, Table P1, p. 235, 824, 897, 898, 957, 958; Table P10, p. 785; Table H1, p. 43, 44, 116, 117, 157, 158.
- _____, 1990, Census of population and housing. Summary tape files 1 and 3, magnetic tape and compact disk containing U.S. Census socioeconomic data: Washington, D.C., Bureau of the Census. [Computer tape and compact disk available from the U.S. Department of Commerce, Bureau of the Census, Washington, D.C. 20233].
- U.S. Geological Survey, 1990, National Water Summary 1987--Hydrologic events and water supply use: U.S. Geological Survey Water-Supply Paper 2350, 553 p.
- Weston, R.F., Inc., 1986, Water supply availability and distribution system evaluation, Edwards Air Force Base, California: Prepared for Edwards Air Force Base, Air Force Systems Command, Andrews Air Force Base, D.C.
- _____, 1988, Work Plan--Water supply availability and distribution system evaluation, rocket site, Edwards Air Force Base, California: Prepared for Edwards Air Force Base, Air Force Systems Command, Andrews Air Force Base, D.C., various pagination.

Table 18. Water-use information for public water suppliers in Antelope Valley by water-supply sources, 1946-92

[Units are in acre-feet. Note: Purchased water may not agree with imported water because it may include purchases from other water suppliers within the Antelope Valley. All values may not add to totals because of independent rounding. --, no data available]

Year	Antelope Valley High School District	Antelope Valley Water Company			Averydale Municipal Water Company	Boron Community Service District			Briarwood Mobile Home Park
	Ground water	Ground water	Purchased	Total	Ground water	Ground water	Purchased	Total	Ground water
1946	0	0	--	0	0	0	--	0	0
1947	100.0	0	--	0	0	0	--	0	0
1948	411.0	26.0	--	26.0	0	0	--	0	0
1949	123.0	27.0	--	27.0	0	0	--	0	0
1950	124.0	28.0	--	28.0	0	0	--	0	0
1951	132.0	162.0	--	162.0	0	0	--	0	0
1952	140.0	1,161.0	--	1,161.0	0	0	--	0	0
1953	61.0	772.0	--	772.0	0	0	--	0	0
1954	9.0	244.0	--	244.0	0	0	--	0	0
1955	165.0	134.0	--	134.0	0	0	--	0	0
1956	45.0	808.0	--	808.0	0	0	--	0	0
1957	261.0	523.0	--	523.0	0	0	--	0	0
1958	11.0	62.0	--	62.0	0	0	--	0	0
1959	347.0	336.0	--	336.0	0	0	--	0	0
1960	0	76.0	--	76.0	0	0	--	0	0
1961	155.0	1,017.0	--	1,017.0	0	0	--	0	0
1962	92.0	509.0	--	509.0	0	0	--	0	0
1963	157.0	99.0	--	99.0	500.0	0	--	0	0
1964	20.0	316.0	--	316.0	0	298.0	--	298.0	0
1965	219.0	108.0	--	108.0	191.0	305.0	--	305.0	0
1966	568.0	1,149.0	--	1,149.0	225.0	347.0	--	347.0	0
1967	1,602.0	90.0	--	90.0	551.0	347.0	--	347.0	0
1968	364.0	109.0	--	109.0	247.0	472.0	--	472.0	0
1969	1,033.0	338.0	--	338.0	464.0	451.0	--	451.0	0
1970	500.0	242.0	--	242.0	0	509.0	--	509.0	0
1971	420.0	346.0	--	346.0	263.0	606.0	--	606.0	0
1972	422.0	625.0	--	625.0	620.0	621.0	--	621.0	0
1973	1,888.0	268.0	--	268.0	236.0	592.0	--	592.0	0
1974	378.0	329.0	--	329.0	243.0	620.0	--	620.0	0
1975	440.0	370.0	--	370.0	204.0	630.0	--	630.0	0
1976	395.0	378.0	0	378.0	243.0	565.0	0	565.0	0
1977	383.0	343.0	0	343.0	238.0	572.0	0	572.0	0
1978	336.0	202.0	90.0	292.0	24.0	605.0	0	605.0	0
1979	303.0	382.0	119.0	501.0	276.0	549.0	0	549.0	0
1980	427.0	439.7	80.0	519.7	461.2	580.0	116.0	696.0	0
1981	305.0	498.2	43.0	541.2	577.6	498.0	190.0	688.0	0
1982	220.0	470.4	29.0	499.4	252.2	290.0	239.0	529.0	0
1983	297.0	323.2	41.0	364.2	238.2	286.0	283.0	569.0	0
1984	209.0	558.2	54.0	612.2	0	238.0	268.0	506.0	0
1985	161.0	578.3	70.0	648.3	295.4	327.0	368.0	695.0	0
1986	200.0	677.1	119.0	796.1	300.7	323.0	364.0	687.0	0
1987	209.0	694.8	142.0	836.8	301.3	225.0	253.0	478.0	0
1988	0	0	188.0	188.0	0	233.0	262.0	495.0	0
1989	259.0	1,763.1	241.0	2,004.1	356.2	0	358.0	358.0	0
1990	0	708.0	238.0	946.0	0	0	264.0	264.0	0
1991	229.0	628.3	181.0	809.3	463.6	0	274.0	274.0	172.3
1992	0	0	207.0	207.0	500.0	0	253.0	253.0	0

PWS-0197-0073

Table 18. Water-use information for public water suppliers in Antelope Valley by water-supply sources, 1946-92--Continued

Year	California Poppy Reserve			Desert Lake Community Services District			Edgemont Acres Mutual Water Co.	Edwards Air Force Base (main base)	Edwards Air Force Base (rocket site)	Evergreen Mutual Water Company
	Ground water	Purchased	Total	Ground water	Purchased	Total	Purchased water	Ground water	Ground water	Ground water
1946	0	--	0	0	--	0	--	0	0.0	0
1947	0	--	0	0	--	0	--	600.0	0	240.0
1948	0	--	0	0	--	0	--	650.0	0	30.0
1949	0	--	0	0	--	0	--	650.0	0	240.0
1950	0	--	0	0	--	0	--	650.0	0	240.0
1951	0	--	0	0	--	0	--	800.0	0	240.0
1952	0	--	0	0	--	0	--	1,000.0	0	240.0
1953	0	--	0	0	--	0	--	1,800.0	0	150.0
1954	0	--	0	0	--	0	--	1,950.0	0	240.0
1955	0	--	0	0	--	0	--	2,200.0	0	200.0
1956	0	--	0	0	--	0	--	2,450.0	0	500.0
1957	0	--	0	0	--	0	--	2,700.0	0	200.0
1958	0	--	0	160.0	--	160.0	--	3,400.0	0	4.0
1959	0	--	0	140.0	--	140.0	--	3,750.0	100.0	0
1960	0	--	0	174.0	--	174.0	--	3,550.0	800.0	0
1961	0	--	0	180.0	--	180.0	--	3,750.0	950.0	203.0
1962	0	--	0	180.0	--	180.0	--	3,950.0	900.0	0
1963	0	--	0	180.0	--	180.0	--	4,100.0	900.0	0
1964	0	--	0	180.0	--	180.0	--	4,900.0	1,600.0	0
1965	0	--	0	290.0	--	290.0	--	4,950.0	1,750.0	57.0
1966	0	--	0	300.0	--	300.0	--	4,725.0	1,500.0	500.0
1967	0	--	0	300.0	--	300.0	--	4,900.0	1,100.0	234.0
1968	0	--	0	367.0	--	367.0	--	0	0	57.0
1969	0	--	0	275.0	--	275.0	--	0	0	322.0
1970	0	--	0	194.0	--	194.0	--	0	0	60.0
1971	0	--	0	305.0	--	305.0	--	0	0	75.0
1972	0	--	0	300.0	--	300.0	--	0	0	1,000.0
1973	0	--	0	329.0	--	329.0	--	0	0	65.0
1974	0	--	0	331.0	--	331.0	--	0	0	75.0
1975	0	--	0	335.0	--	335.0	--	0	0	75.0
1976	0	0	0	318.0	0	318.0	0	6,300.0	0	125.0
1977	0	0	0	320.0	0	320.0	0	5,900.0	0	125.0
1978	0	0	0	322.0	0	322.0	0	6,275.0	0	36.0
1979	0	0	0	330.0	0	330.0	0	0	0	0
1980	0	0	0	225.0	0	225.0	0	0	0	0
1981	0	0	0	260.0	62.0	322.0	4.0	5,225.0	0	0
1982	0	0	0	270.0	54.0	324.0	45.0	4,900.0	0	0
1983	0	0	0	300.0	85.0	385.0	14.0	5,500.0	0	32.0
1984	0	0	0	180.0	72.0	252.0	6.0	5,300.0	500.0	51.0
1985	0	0	0	193.0	58.0	251.0	18.0	3,722.4	0	53.0
1986	0	12.0	12.0	213.0	44.0	257.0	63.0	5,792.9	0	55.0
1987	0	7.0	7.0	195.0	31.0	226.0	185.0	5,545.1	0	70.0
1988	0	5.0	5.0	177.0	82.0	259.0	79.0	5,643.8	426.1	0
1989	0	6.0	6.0	0	80.0	80.0	185.0	5,030.3	65.5	70.0
1990	0	7.0	7.0	0	30.0	30.0	111.0	5,330.6	359.0	85.0
1991	.2	6.0	6.2	406.2	30.0	436.2	64.0	3,466.3	453.3	70.0
1992	0	16.0	16.0	0	24.0	24.0	70.0	3,144.7	414.0	0

PWS-0197-0074

Table 18. Water-use information for public water suppliers in Antelope Valley by water-supply sources, 1946-92--*Continued*

Year	Los Angeles County Waterworks District No. 4			Los Angeles County Waterworks District No. 24			Los Angeles County Waterworks District No. 27			Los Angeles County Waterworks District No. 33		
	Ground water	Purchased	Total	Ground water	Purchased	Total	Ground water	Ground water	Purchased	Total		
1946	200.0	--	200.0	0	--	0	400.0	0	--	0		
1947	200.0	--	200.0	0	--	0	0	0	--	0		
1948	839.0	--	839.0	0	--	0	200.0	0	--	0		
1949	1,137.0	--	1,137.0	0	--	0	0	0	--	0		
1950	585.0	--	585.0	0	--	0	0	0	--	0		
1951	298.0	--	298.0	0	--	0	400.0	306.0	--	306.0		
1952	1,087.0	--	1,087.0	0	--	0	0	0	--	0		
1953	3,136.0	--	3,136.0	0	--	0	399.0	214.0	--	214.0		
1954	1,515.0	--	1,515.0	455.0	--	455.0	0	160.0	--	160.0		
1955	1,762.0	--	1,762.0	0	--	0	208.0	160.0	--	160.0		
1956	2,463.0	--	2,463.0	0	--	0	1,017.0	160.0	--	160.0		
1957	4,333.0	--	4,333.0	0	--	0	782.0	53.0	--	53.0		
1958	3,405.0	--	3,405.0	0	--	0	550.0	878.0	--	878.0		
1959	4,157.0	--	4,157.0	0	--	0	1,320.0	147.0	--	147.0		
1960	5,387.0	--	5,387.0	6.0	--	6.0	194.0	192.0	--	192.0		
1961	3,649.0	--	3,649.0	884.0	--	884.0	1,081.0	4,800.0	--	4,800.0		
1962	9,945.0	--	9,945.0	819.0	--	819.0	219.0	197.0	--	197.0		
1963	7,760.0	--	7,760.0	227.0	--	227.0	283.0	125.0	--	125.0		
1964	8,097.0	--	8,097.0	241.0	--	241.0	246.0	244.0	--	244.0		
1965	8,223.0	--	8,223.0	145.0	--	145.0	330.0	60.0	--	60.0		
1966	7,979.0	--	7,979.0	152.0	--	152.0	403.0	20.0	--	20.0		
1967	8,365.0	--	8,365.0	948.0	--	948.0	362.0	417.0	--	417.0		
1968	10,750.0	--	10,750.0	170.0	--	170.0	443.0	0	--	0		
1969	10,978.0	--	10,978.0	147.0	--	147.0	730.0	1,103.0	--	1,103.0		
1970	12,572.0	--	12,572.0	186.0	--	186.0	674.0	0	--	0		
1971	12,462.0	--	12,462.0	270.0	--	270.0	502.0	22.0	--	22.0		
1972	13,206.0	--	13,206.0	117.0	--	117.0	846.0	0	--	0		
1973	13,890.0	--	13,890.0	123.0	--	123.0	468.0	0	--	0		
1974	13,252.0	--	13,252.0	130.0	--	130.0	504.0	0	--	0		
1975	12,207.0	--	12,207.0	96.0	--	96.0	453.0	0	--	0		
1976	11,875.0	0	11,875.0	139.0	0	139.0	728.0	0	0	0		
1977	10,038.0	0	10,038.0	119.0	0	119.0	657.0	0	0	0		
1978	15,574.1	4,266.0	19,840.1	163.0	0	163.0	654.0	0	0	0		
1979	7,535.2	5,750.0	13,285.2	179.3	0	179.3	656.1	0	0	0		
1980	7,773.9	4,732.0	12,505.9	109.0	0	109.0	726.7	0	0	0		
1981	8,096.0	6,359.0	14,455.0	93.1	0	93.1	550.4	0	0	0		
1982	9,382.6	4,359.0	13,741.6	101.3	0	101.3	716.8	0	66.0	66.0		
1983	5,972.3	3,978.0	9,950.3	114.0	0	114.0	500.9	0	193.0	193.0		
1984	10,346.5	7,088.0	17,434.5	134.4	0	134.4	426.7	0	391.0	391.0		
1985	8,852.5	7,959.0	16,811.5	189.2	45.0	234.2	518.3	0	664.0	664.0		
1986	11,125.7	9,709.0	20,834.7	164.9	191.0	355.9	535.0	0	656.0	656.0		
1987	12,199.1	10,148.0	22,347.1	111.6	232.0	343.6	611.5	0	705.0	705.0		
1988	11,371.9	12,759.0	24,130.9	106.1	360.0	466.1	630.4	0	703.0	703.0		
1989	14,390.7	13,593.0	27,983.7	95.2	386.0	481.2	590.4	0	773.0	773.0		
1990	11,820.1	16,257.0	28,077.1	173.6	488.0	661.6	859.5	0	465.0	465.0		
1991	14,404.8	9,518.0	23,922.8	96.1	186.0	282.1	634.7	2.0	642.0	644.0		
1992	8,835.8	12,691.0	21,526.8	117.3	219.0	336.3	366.8	0	823.0	823.0		

PWS-0197-0075

Table 18. Water-use information for public water suppliers in Antelope Valley by water-supply sources, 1946-92--Continued

Year	Los Angeles County Waterworks District No. 34			Los Angeles County Waterworks District No. 35			Los Angeles County Waterworks District No. 38			Los Angeles County Waterworks District No. 39	
	Ground water	Purchased	Total	Ground water	Ground water	Purchased	Total	Ground water			
1946	0	--	0	0	0	--	0	0			
1947	0	--	0	0	0	--	0	0			
1948	0	--	0	0	188.0	--	188.0	0			
1949	0	--	0	0	0	--	0	0			
1950	0	--	0	0	0	--	0	0			
1951	0	--	0	0	0	--	0	0			
1952	0	--	0	0	0	--	0	0			
1953	0	--	0	316.0	0	--	0	0			
1954	0	--	0	0	0	--	0	0			
1955	0	--	0	0	0	--	0	0			
1956	0	--	0	0	0	--	0	0			
1957	0	--	0	0	21.0	--	21.0	0			
1958	0	--	0	0	403.0	--	403.0	0			
1959	0	--	0	0	10.0	--	10.0	0			
1960	0	--	0	0	0	--	0	0			
1961	0	--	0	37.0	585.0	--	585.0	0			
1962	0	--	0	0	355.0	--	355.0	0			
1963	0	--	0	0	1,772.0	--	1,772.0	0			
1964	0	--	0	1.0	1,204.0	--	1,204.0	0			
1965	0	--	0	0	3,002.0	--	3,002.0	0			
1966	0	--	0	10.0	2,227.0	--	2,227.0	0			
1967	0	--	0	17.0	289.0	--	289.0	0			
1968	0	--	0	23.0	1,150.0	--	1,150.0	0			
1969	0	--	0	35.0	2,600.0	--	2,600.0	0			
1970	0	--	0	72.0	579.0	--	579.0	0			
1971	0	--	0	79.0	672.0	--	672.0	0			
1972	0	--	0	1,630.0	94.0	--	94.0	0			
1973	0	--	0	138.0	558.0	--	558.0	0			
1974	0	--	0	92.0	590.0	--	590.0	0			
1975	0	--	0	104.0	680.0	--	680.0	0			
1976	0	0	0	69.0	742.0	0	742.0	0			
1977	0	0	0	86.0	604.0	0	604.0	0			
1978	0	0	0	2,055.0	593.0	0	593.0	0			
1979	0	0	0	16.7	800.1	0	800.1	0			
1980	0	0	0	.4	980.6	0	980.6	0			
1981	0	0	0	5.6	666.9	0	666.9	0			
1982	0	0	0	64.5	723.9	0	723.9	0			
1983	0	0	0	53.4	575.4	0	575.4	0			
1984	0	0	0	7.8	754.2	53.0	807.2	0			
1985	0	0	0	68.2	162.5	916.0	1,078.5	0			
1986	0	0	0	42.8	961.7	673.0	1,634.7	0			
1987	0	0	0	56.6	1,147.8	883.0	2,030.8	0			
1988	0	0	0	7.5	1,029.2	1,260.0	2,289.2	165.2			
1989	0	1,278.0	1,278.0	2.2	1,373.7	1,596.0	2,969.7	167.0			
1990	299.4	1,607.0	1,906.4	8.1	740.2	2,100.0	2,840.2	151.5			
1991	1,048.7	1,140.0	2,188.7	61.7	726.1	1,454.0	2,180.1	118.6			
1992	258.5	2,738.0	2,996.5	86.8	200.5	2,230.0	2,430.5	239.0			

PWS-0197-0076

Table 18. Water-use information for public water suppliers in Antelope Valley by water-supply sources, 1946-92--Continued

Year	Land Project	Landale Mutual			Little Baldy	Littlerock Creek Irrigation District			
	Mutual Water	Water Company			Water				
	Company	Ground	Purchased	Total	Company	Ground	Surface	Purchased	Total
	Ground water	water			Surface	water	water		
					water				
1946	0	0	--	0	--	0	2,219.3	--	2,219.3
1947	0	0	--	0	21.7	2,966.0	3,583.5	--	6,549.5
1948	0	0	--	0	21.7	2,166.0	2,732.3	--	4,898.3
1949	0	0	--	0	21.7	2,941.0	1,306.0	--	4,247.0
1950	0	0	--	0	21.7	2,495.0	978.0	--	3,473.0
1951	0	0	--	0	21.7	1,587.0	1,005.0	--	2,592.0
1952	0	0	--	0	21.7	1,367.0	--	--	1,367.0
1953	0	0	--	0	21.7	1,687.0	--	--	1,687.0
1954	0	0	--	0	21.7	4,005.0	--	--	4,005.0
1955	0	0	--	0	21.7	4,285.0	2,564.6	--	6,849.6
1956	0	0	--	0	21.7	4,902.0	1,868.3	--	6,770.3
1957	0	0	--	0	21.7	2,240.0	1,888.4	--	4,128.4
1958	0	0	--	0	21.7	1,425.0	2,436.3	--	3,861.3
1959	0	0	--	0	21.7	4,037.0	2,040.7	--	6,077.7
1960	0	0	--	0	21.7	2,496.0	604.5	0	3,100.5
1961	0	500.0	--	500.0	21.7	4,165.0	511.0	0	4,676.0
1962	0	0	--	0	21.7	5,461.0	2,142.0	0	7,603.0
1963	0	20.0	--	20.0	21.7	2,122.0	979.0	0	3,101.0
1964	0	302.0	--	302.0	21.7	3,693.0	2,018.0	0	5,711.0
1965	0	252.0	--	252.0	21.7	2,967.0	4,704.0	0	7,671.0
1966	0	649.0	--	649.0	21.7	4,357.0	189.0	0	4,546.0
1967	0	293.0	--	293.0	--	3,505.0	2,357.0	0	5,862.0
1968	0	171.0	--	171.0	21.7	3,227.0	4,878.0	0	8,105.0
1969	0	144.0	--	144.0	21.7	2,630.0	4,663.0	0	7,293.0
1970	0	141.0	--	141.0	--	1,350.0	3,208.3	0	4,558.3
1971	0	120.0	--	120.0	21.7	2,897.0	3,052.0	0	5,949.0
1972	0	746.0	--	746.0	21.7	3,566.0	2,857.3	338.0	6,761.3
1973	0	278.0	--	278.0	21.7	2,557.0	3,717.5	290.0	6,564.5
1974	0	0	--	0	21.7	2,369.0	3,302.9	400.0	6,071.9
1975	0	251.0	--	251.0	21.7	2,145.0	3,791.4	520.0	6,456.4
1976	0	0	0	0	21.7	0	2,569.2	589.0	3,158.2
1977	0	0	0	0	21.7	0	2,412.9	111.0	2,523.9
1978	0	0	0	0	21.7	2,444.3	1,989.9	208.0	4,642.2
1979	0	0	0	0	21.7	2,480.0	1,932.4	133.0	4,545.4
1980	0	245.0	0	245.0	21.7	2,515.0	1,718.6	191.0	4,424.6
1981	0	245.0	0	245.0	21.7	1,385.6	1,806.2	1,270.0	4,461.8
1982	0	0	0	0	21.7	2,060.8	1,603.6	0	3,664.4
1983	0	255.0	0	255.0	21.7	1,672.6	1,199.2	38.0	2,909.8
1984	0	0	0	0	21.7	2,141.1	1,464.4	1.0	3,606.5
1985	558.5	271.0	0	271.0	21.7	1,830.0	1,337.3	0	3,167.3
1986	0	211.9	0	211.9	21.7	2,042.0	903.0	163.0	3,108.0
1987	0	0	0	0	21.7	1,601.0	1,545.0	1,080.0	4,226.0
1988	0	0	0	0	10.0	65.7	1,445.0	419.0	1,929.7
1989	0	229.1	0	229.1	10.0	1,593.0	1,145.0	971.0	3,709.0
1990	0	206.5	0	206.5	10.0	1,526.0	--	1,747.0	3,273.0
1991	0	0	11.0	11.0	--	1,991.0	--	858.0	2,849.0
1992	0	0	1.0	1.0	--	0	--	--	0

PWS-0197-0077

Table 18. Water-use information for public water suppliers in Antelope Valley by water-supply sources, 1946-92--Continued

Year	Mojave Public Utility District			North Edwards Water District	Northrop Corporation B-2 Division	Oak Springs Valley Water Company	Palm Ranch Irrigation District		
	Ground water	Purchased	Total	Ground water	Ground water	Ground water	Ground water	Purchased	Total
1946	0	--	0	0	0	0	0	--	0
1947	0	--	0	0	0	0	307.0	--	307.0
1948	0	--	0	0	0	0	307.0	--	307.0
1949	0	--	0	0	0	0	935.0	--	935.0
1950	0	--	0	0	0	0	307.0	--	307.0
1951	0	--	0	0	0	0	307.0	--	307.0
1952	0	--	0	0	0	0	307.0	--	307.0
1953	0	--	0	0	0	0	210.0	--	210.0
1954	0	--	0	0	0	0	307.0	--	307.0
1955	0	--	0	0	0	0	320.0	--	320.0
1956	0	--	0	0	0	0	56.0	--	56.0
1957	0	--	0	0	0	0	384.0	--	384.0
1958	0	--	0	67.0	0	0	472.0	--	472.0
1959	0	--	0	108.0	0	0	898.0	--	898.0
1960	0	--	0	108.0	0	0	483.0	--	483.0
1961	0	--	0	106.0	0	0	310.0	--	310.0
1962	0	--	0	106.0	0	0	418.0	--	418.0
1963	0	--	0	108.0	0	0	1,431.0	--	1,431.0
1964	0	--	0	110.0	0	1.0	675.0	--	675.0
1965	0	--	0	100.0	0	1.0	675.0	--	675.0
1966	0	--	0	115.0	0	1.0	466.0	--	466.0
1967	0	--	0	120.0	0	9.0	598.0	--	598.0
1968	0	--	0	127.0	0	11.0	916.0	--	916.0
1969	0	--	0	152.0	0	20.0	857.0	--	857.0
1970	0	--	0	177.0	0	23.0	815.0	--	815.0
1971	0	--	0	180.0	0	24.0	747.0	--	747.0
1972	0	--	0	180.0	0	562.0	5.0	--	5.0
1973	0	--	0	180.0	0	24.0	953.0	--	953.0
1974	0	--	0	188.0	0	34.0	1,021.0	--	1,021.0
1975	0	--	0	190.0	0	29.0	1,053.0	--	1,053.0
1976	0	0	0	190.0	0	31.0	1,101.0	0	1,101.0
1977	0	0	0	190.0	0	33.0	1,007.0	0	1,007.0
1978	0	0	0	190.0	0	35.0	815.0	217.0	1,032.0
1979	0	150.0	150.0	190.0	0	0	0	307.0	307.0
1980	0	137.0	137.0	190.0	0	40.0	322.2	779.0	1,101.2
1981	0	316.0	316.0	190.0	0	0	223.7	992.0	1,215.7
1982	0	358.0	358.0	190.0	0	0	0	591.0	591.0
1983	0	612.0	612.0	190.0	0	0	402.3	338.0	740.3
1984	0	563.0	563.0	275.0	0	0	569.7	339.0	908.7
1985	0	516.0	516.0	250.0	0	0	753.8	407.0	1,160.8
1986	0	735.0	735.0	259.0	0	0	183.5	979.0	1,162.5
1987	0	696.0	696.0	245.0	0	0	244.5	1,057.0	1,301.5
1988	0	462.0	462.0	187.0	0	0	0	790.0	790.0
1989	1,322.0	401.0	1,723.0	0	0	0	582.0	969.0	1,551.0
1990	1,286.0	288.0	1,574.0	0	0	0	451.0	1,070.0	1,521.0
1991	1,213.9	468.0	1,681.9	113.4	66.9	0	887.3	409.0	1,296.3
1992	0	433.0	433.0	0	0	0	0	679.0	679.0

PWS-0197-0078

Table 18. Water-use information for public water suppliers in Antelope Valley by water-supply sources, 1946-92--*Continued*

Year	Palmdale Water District				Quartz Hill Water District			Rosamond Community Service District		
	Ground water	Surface water	Purchased	Total	Ground water	Purchased	Total	Ground water	Purchased	Total
1946	0	--	--	0	0	--	0	0	--	0
1947	1,865.0	--	--	1,865.0	480.0	--	480.0	0	--	0
1948	5,478.0	--	--	5,478.0	729.0	--	729.0	0	--	0
1949	2,747.0	--	--	2,747.0	645.0	--	645.0	0	--	0
1950	1,732.0	--	--	1,732.0	480.0	--	480.0	0	--	0
1951	1,259.0	--	--	1,259.0	480.0	--	480.0	0	--	0
1952	7,107.0	--	--	7,107.0	43.0	--	43.0	0	--	0
1953	2,732.0	--	--	2,732.0	480.0	--	480.0	0	--	0
1954	7,134.0	--	--	7,134.0	28.0	--	28.0	0	--	0
1955	5,499.0	--	--	5,499.0	480.0	--	480.0	0	--	0
1956	4,388.0	--	--	4,388.0	480.0	--	480.0	0	--	0
1957	4,609.0	--	--	4,609.0	816.0	--	816.0	0	--	0
1958	4,244.0	--	--	4,244.0	170.0	--	170.0	0	--	0
1959	3,141.0	--	--	3,141.0	1,125.0	--	1,125.0	0	--	0
1960	2,993.0	--	0	2,993.0	385.0	--	385.0	0	--	0
1961	2,868.0	--	0	2,868.0	1,085.0	--	1,085.0	0	--	0
1962	10,527.0	--	0	10,527.0	334.0	--	334.0	0	--	0
1963	2,851.0	--	0	2,851.0	1,037.0	--	1,037.0	0	--	0
1964	5,883.0	--	0	5,883.0	3,134.0	--	3,134.0	0	--	0
1965	5,000.0	--	0	5,000.0	605.0	--	605.0	0	--	0
1966	5,645.0	--	0	5,645.0	811.0	--	811.0	0	--	0
1967	5,394.0	--	0	5,394.0	610.0	--	610.0	0	--	0
1968	8,634.0	--	0	8,634.0	212.0	--	212.0	0	--	0
1969	6,922.0	--	0	6,922.0	2,914.0	--	2,914.0	0	--	0
1970	6,144.0	--	0	6,144.0	917.0	--	917.0	0	--	0
1971	6,107.0	--	0	6,107.0	922.0	--	922.0	0	--	0
1972	5,436.0	--	0	5,436.0	138.0	--	138.0	0	--	0
1973	6,041.0	--	0	6,041.0	1,281.0	--	1,281.0	0	--	0
1974	6,030.0	--	0	6,030.0	1,167.0	--	1,167.0	0	--	0
1975	6,458.0	--	0	6,458.0	0	--	0	0	--	0
1976	6,092.0	--	0	6,092.0	1,474.0	0	1,474.0	0	0	0
1977	5,102.0	--	0	5,102.0	1,353.0	0	1,353.0	0	0	0
1978	6,911.1	--	0	6,911.1	1,015.0	568.0	1,583.0	0	0	0
1979	5,999.4	--	0	5,999.4	732.0	872.0	1,604.0	0	21.0	21.0
1980	6,125.7	--	0	6,125.7	752.0	992.0	1,744.0	0	3.0	3.0
1981	8,092.9	--	0	8,092.9	848.4	1,154.0	2,002.4	0	6.0	6.0
1982	6,713.7	--	0	6,713.7	658.3	1,131.0	1,789.3	0	11.0	11.0
1983	5,059.4	--	0	5,059.4	752.0	930.0	1,682.0	0	64.0	64.0
1984	6,177.2	--	0	6,177.2	1,147.0	1,247.0	2,394.0	0	76.0	76.0
1985	8,296.4	--	1,558.0	9,854.4	826.2	1,601.0	2,427.2	0	50.0	50.0
1986	7,811.5	--	3,096.0	10,907.5	1,332.1	1,220.0	2,552.1	0	14.0	14.0
1987	7,971.4	--	5,379.0	13,350.4	900.0	1,407.0	2,307.0	0	20.0	20.0
1988	844.0	--	1,770.0	2,614.0	900.0	1,133.0	2,033.0	0	79.0	79.0
1989	10,002.0	--	9,009.0	19,011.0	1,661.0	1,369.0	3,030.0	775.0	159.0	934.0
1990	10,208.9	--	8,608.0	18,816.9	1,190.0	1,950.0	3,140.0	780.0	498.0	1,278.0
1991	12,720.1	--	6,525.0	19,245.1	1,311.0	1,543.0	2,854.0	1,235.4	535.0	1,770.4
1992	10,266.0	3,288.0	4,007.0	17,561.0	1,373.9	1,646.0	3,019.9	0	898.0	898.0

PWS-0197-0079

Table 18. Water-use information for public water suppliers in Antelope Valley by water-supply sources, 1946-92--Continued

Year	San Bernardino County Service Area No. 70L			Shadow Acres Mutual Water Company	Saint Andrews Priory	Sunnyside Farms Mutual Water Company	U.S. Borax and Chemical Corporation		
	Ground water	Surface water	Total				Ground water	Purchased	Total
1946	0	--	0	--	0	--	--	--	0
1947	0	--	0	--	0	--	--	--	0
1948	0	--	0	--	0	--	--	--	0
1949	0	17.9	17.9	--	550.0	--	--	--	0
1950	0	17.9	17.9	--	0	--	--	--	0
1951	0	17.9	17.9	--	0	--	--	--	0
1952	0	17.9	17.9	--	8.0	--	--	--	0
1953	0	17.9	17.9	--	496.0	--	--	--	0
1954	0	17.9	17.9	--	734.0	--	--	--	0
1955	0	17.9	17.9	--	0	--	--	--	0
1956	0	17.9	17.9	--	1,071.0	--	--	--	0
1957	0	17.9	17.9	--	75.0	--	--	--	0
1958	0	17.9	17.9	--	305.0	--	160.0	--	160.0
1959	0	17.9	17.9	--	149.0	--	1,015.0	--	1,015.0
1960	0	17.9	17.9	--	103.0	--	865.0	--	865.0
1961	0	17.9	17.9	--	220.0	--	1,167.0	--	1,167.0
1962	0	17.9	17.9	--	60.0	--	1,294.0	--	1,294.0
1963	0	24.1	24.1	--	308.0	--	1,216.0	--	1,216.0
1964	0	23.7	23.7	--	448.0	--	1,248.0	--	1,248.0
1965	0	17.9	17.9	--	71.0	--	1,397.0	--	1,397.0
1966	0	10.0	10.0	--	65.0	--	1,506.0	--	1,506.0
1967	0	11.0	11.0	--	65.0	--	1,494.0	--	1,494.0
1968	0	17.0	17.0	--	24.0	--	1,525.0	--	1,525.0
1969	0	22.0	22.0	--	10.0	--	1,890.0	--	1,890.0
1970	0	25.4	25.4	--	60.0	--	1,801.0	--	1,801.0
1971	0	29.0	29.0	--	75.0	--	1,762.0	--	1,762.0
1972	0	28.8	28.8	--	0	--	1,770.0	--	1,770.0
1973	0	27.1	27.1	--	102.0	--	2,166.0	--	2,166.0
1974	0	29.1	29.1	--	98.0	--	2,202.0	--	2,202.0
1975	0	24.5	24.5	--	96.0	--	2,619.0	--	2,619.0
1976	0	17.9	17.9	0	92.0	0	2,956.0	0	2,956.0
1977	0	20.3	20.3	0	69.0	0	2,970.0	0	2,970.0
1978	0	12.4	12.4	0	68.0	111.0	2,924.0	0	2,924.0
1979	0	23.0	23.0	0	0	148.0	2,726.0	0	2,726.0
1980	0	32.0	32.0	0	63.0	159.0	2,476.0	935.0	3,411.0
1981	0	35.9	35.9	0	135.0	182.0	2,248.0	1,415.0	3,663.0
1982	0	35.9	35.9	0	143.0	150.0	1,729.0	1,039.0	2,768.0
1983	0	35.9	35.9	0	0	129.0	1,448.0	841.0	2,289.0
1984	0	35.9	35.9	0	199.2	273.0	1,285.0	1,109.0	2,394.0
1985	0	35.9	35.9	0	236.9	183.0	1,555.0	651.0	2,206.0
1986	336.0	35.9	371.9	0	147.7	196.0	1,697.0	605.0	2,302.0
1987	247.6	35.9	283.5	0	163.0	207.0	1,789.0	678.0	2,467.0
1988	280.4	35.9	316.3	13.0	0	227.0	1,954.0	735.0	2,689.0
1989	261.8	35.9	297.7	93.0	218.0	258.0	1,722.0	682.0	2,404.0
1990	578.2	35.9	614.1	131.0	0	223.0	1,682.0	865.0	2,547.0
1991	672.0	35.9	707.9	123.0	0	184.0	1,214.0	1,261.0	2,475.0
1992	0	35.9	35.9	133.0	0	226.0	--	1,084.0	1,084.0

PWS-0197-0080

Table 18. Water-use information for public water suppliers in Antelope Valley by water-supply sources, 1946-92--Continued

Year	USAF Plant 42 (Rockwell)	West Side Park Mutual Water Company	White Fence Farms Mutual Water Company			Public water suppliers				No. of suppliers (of 40)
	Ground water	Ground water	Ground water	Purchased	Total	Total ground water	Total surface water	Total purchased	Grand total	
1946	0	0	0	--	0	600.0	2,219.3	0	2,819.3	3
1947	0	0	0	--	0	6,758.0	3,605.2	0	10,363.2	9
1948	0	0	0	--	0	11,024.0	2,754.0	0	13,778.0	12
1949	0	0	0	--	0	9,995.0	1,345.6	0	11,340.6	12
1950	0	0	0	--	0	6,641.0	1,017.6	0	7,658.6	12
1951	0	0	0	--	0	5,971.0	1,044.6	0	7,015.6	13
1952	0	0	0	--	0	12,460.0	39.6	0	12,499.6	12
1953	0	0	0	--	0	12,453.0	39.6	0	12,492.6	15
1954	0	0	0	--	0	16,781.0	39.6	0	16,820.6	14
1955	0	0	0	--	0	15,413.0	2,604.3	0	18,017.3	13
1956	0	0	0	--	0	18,340.0	1,908.0	0	20,248.0	14
1957	0	0	0	--	0	16,997.0	1,928.0	0	18,925.0	15
1958	0	0	0	--	0	15,716.0	2,475.9	0	18,191.9	18
1959	0	0	211.0	--	211.0	20,991.0	2,080.4	0	23,071.4	19
1960	0	0	225.0	--	225.0	18,037.0	644.1	0	18,681.1	18
1961	0	0	87.0	--	87.0	27,799.0	550.6	0	28,349.6	23
1962	0	0	736.0	--	736.0	36,102.0	2,181.6	0	38,283.6	20
1963	0	0	213.0	--	213.0	25,409.0	1,024.8	0	26,433.8	22
1964	0	0	206.0	--	206.0	33,047.0	2,063.4	0	35,110.4	24
1965	0	0	526.0	--	526.0	31,224.0	4,743.6	0	35,967.6	25
1966	0	0	174.0	--	174.0	33,894.0	220.7	0	34,114.7	25
1967	0	0	1,084.0	--	1,084.0	32,694.0	2,368.0	0	35,062.0	25
1968	0	0	640.0	--	640.0	30,239.0	4,916.7	0	35,155.7	23
1969	0	0	1,333.0	--	1,333.0	35,348.0	4,706.7	0	40,054.7	24
1970	0	0	561.0	--	561.0	27,577.0	3,233.7	0	30,810.7	21
1971	0	0	526.0	--	526.0	29,382.0	3,102.8	0	32,484.8	24
1972	0	0	1,012.0	--	1,012.0	32,896.0	2,907.8	338.0	36,141.8	22
1973	0	0	559.0	--	559.0	32,696.0	3,766.3	290.0	36,752.3	23
1974	0	0	596.0	--	596.0	30,249.0	3,353.7	400.0	34,002.7	22
1975	0	0	501.0	--	501.0	28,936.0	3,837.6	520.0	33,293.6	22
1976	0	0	540.0	0	540.0	34,353.0	2,608.8	589.0	37,550.8	23
1977	0	0	433.0	9.0	442.0	30,542.0	2,454.9	120.0	33,116.9	23
1978	0	0	470.0	110.0	580.0	41,711.5	2,024.0	5,570.0	49,305.5	24
1979	0	104.0	0	150.0	150.0	23,258.8	1,977.1	7,650.0	32,886.0	23
1980	0	113.3	256.8	160.0	416.8	24,822.5	1,772.3	8,284.0	34,878.8	26
1981	0	117.8	552.3	185.0	737.3	30,814.5	1,863.8	12,178.0	44,856.3	27
1982	0	113.9	491.6	181.0	672.6	29,492.0	1,661.2	8,253.0	39,406.2	27
1983	0	120.8	518.8	390.0	908.8	24,611.3	1,256.8	7,936.0	33,804.1	28
1984	0	139.1	401.2	510.0	911.2	31,040.3	1,522.0	12,050.0	44,612.3	28
1985	0	149.1	462.0	470.0	932.0	30,309.7	1,394.8	15,534.0	47,238.5	30
1986	0	160.6	671.8	325.0	996.8	35,244.9	960.6	19,164.0	55,369.5	30
1987	0	158.8	742.0	438.0	1,180.0	35,429.1	1,602.6	23,548.0	60,579.7	29
1988	0	163.3	729.8	419.0	1,148.8	24,914.3	1,490.9	21,745.0	48,150.2	28
1989	0	200.8	367.6	891.0	1,258.6	43,097.6	1,190.9	33,298.0	77,586.0	33
1990	0	168.9	787.6	775.0	1,562.6	39,400.0	45.9	37,722.0	77,167.9	30
1991	159.2	186.0	455.8	482.0	937.8	45,207.7	35.9	25,894.0	71,137.6	35
1992	0	0	0	413.0	413.0	25,803.3	3,323.9	28,791.0	57,918.2	27

PWS-0197-0081

Table 19. Water-use information for self-supplied water users in Antelope Valley by water-supply sources, 1946-92

[Units are in acre-feet. Note: Purchased water may not agree with imported water because it may include purchases from other water suppliers within the Antelope Valley. All values may not add to totals because of independent rounding, --, no data available]

Year	No owner name	Abreu, Gregorio B. and Cornelia M.	Alesso Farms	Almondale Farms	Antelope Valley Country Club			Association of Irrigation Water Users
	Recorded ground water	Surface water	Ground water	Purchased	Ground water	Purchased	Total	Purchased
1946	230.0	--	0	--	0	--	0	--
1947	56,598.0	--	0	--	0	--	0	--
1948	98,407.0	362.0	0	--	0	--	0	--
1949	106,936.0	362.0	0	--	0	--	0	--
1950	83,086.0	362.0	0	--	0	--	0	--
1951	123,020.0	362.0	0	--	0	--	0	--
1952	167,084.0	362.0	0	--	0	--	0	--
1953	142,690.0	362.0	0	--	0	--	0	--
1954	162,615.0	362.0	0	--	0	--	0	--
1955	169,504.0	362.0	0	--	281.0	--	281.0	--
1956	199,274.0	362.0	0	--	355.0	--	355.0	--
1957	160,632.0	362.0	0	--	421.0	--	421.0	--
1958	149,350.0	362.0	0	--	518.0	--	518.0	--
1959	170,342.0	362.0	0	--	673.0	--	673.0	--
1960	121,834.0	362.0	0	--	606.0	--	606.0	--
1961	138,825.0	362.0	0	--	280.0	--	280.0	--
1962	155,049.0	362.0	0	--	609.0	--	609.0	--
1963	118,652.0	362.0	2,640.0	--	598.0	--	598.0	--
1964	111,765.0	362.0	867.0	--	605.0	--	605.0	--
1965	48,487.0	362.0	2,820.0	--	0	--	0	--
1966	92,012.0	362.0	2,600.0	--	475.0	--	475.0	--
1967	103,318.0	362.0	3,432.0	--	0	--	0	--
1968	103,153.0	362.0	3,060.0	--	450.0	--	450.0	--
1969	60,922.0	362.0	5,249.0	--	360.0	--	360.0	--
1970	14,455.0	362.0	3,450.0	--	360.0	--	360.0	--
1971	14,917.0	362.0	2,625.0	--	360.0	--	360.0	--
1972	14,338.0	362.0	514.0	--	0	--	0	--
1973	2,221.0	362.0	4,457.0	--	360.0	--	360.0	--
1974	1,667.0	362.0	4,457.0	--	360.0	--	360.0	--
1975	460.0	--	4,150.0	--	360.0	--	360.0	--
1976	984.0	--	4,150.0	0	360.0	0	360.0	0
1977	31.0	--	3,120.0	0	650.0	0	650.0	13.0
1978	0	--	0	0	650.0	0	650.0	187.0
1979	0	--	0	0	0	0	0	245.0
1980	0	--	0	0	450.0	52.0	502.0	311.0
1981	0	--	0	0	200.0	421.0	621.0	223.0
1982	1,032.0	--	0	0	200.0	324.0	524.0	123.0
1983	0	362.0	0	0	200.0	361.0	561.0	20.0
1984	675.0	362.0	0	0	200.0	444.0	644.0	30.0
1985	0	362.0	0	0	200.0	429.0	629.0	69.0
1986	480.0	--	0	0	0	567.0	567.0	33.0
1987	0	--	0	372.0	1.0	514.0	515.0	33.0
1988	0	--	0	658.0	0	605.0	605.0	42.0
1989	0	362.0	0	907.0	.9	616.0	616.9	31.0
1990	0	362.0	0	808.0	0	510.0	510.0	37.0
1991	0	362.0	0	530.0	10.0	465.0	475.0	8.0
1992	0	--	0	725.0	0	277.0	277.0	27.0

PWS-0197-0082

Table 19. Water-use information for self-supplied water users in Antelope Valley by water-supply sources, 1946-92--Continued

Year	Baicy, John			Ball, William C., Junior, and Mildred P.	Berry Ranch			Bispaichipy Ranch	Bio Gro Systems, Incorporated
	Ground water	Purchased	Total	Surface water	Ground water	Purchased	Total	Purchased	Purchased
1946	--	--	0	--	--	--	0	--	--
1947	--	--	0	--	--	--	0	--	--
1948	--	--	0	--	--	--	0	--	--
1949	--	--	0	22.4	--	--	0	--	--
1950	--	--	0	22.4	--	--	0	--	--
1951	--	--	0	22.4	--	--	0	--	--
1952	--	--	0	22.4	--	--	0	--	--
1953	--	--	0	22.4	--	--	0	--	--
1954	--	--	0	22.4	--	--	0	--	--
1955	--	--	0	22.4	--	--	0	--	--
1956	--	--	0	22.4	--	--	0	--	--
1957	--	--	0	22.4	--	--	0	--	--
1958	--	--	0	22.4	--	--	0	--	--
1959	--	--	0	22.4	--	--	0	--	--
1960	--	--	0	22.4	--	--	0	--	--
1961	--	--	0	22.4	--	--	0	--	--
1962	--	--	0	22.4	--	--	0	--	--
1963	-	--	0	22.4	--	--	0	--	--
1964	--	--	0	22.4	--	--	0	--	--
1965	--	--	0	22.4	--	--	0	--	--
1966	--	--	0	22.4	--	--	0	--	--
1967	--	--	0	--	--	--	0	--	--
1968	--	--	0	22.4	--	--	0	--	--
1969	--	--	0	22.4	--	--	0	--	--
1970	--	--	0	22.4	--	--	0	--	--
1971	--	--	0	22.4	--	--	0	--	--
1972	--	--	0	22.4	--	--	0	--	--
1973	--	--	0	22.4	--	--	0	--	--
1974	--	--	0	22.4	--	--	0	--	--
1975	--	--	0	22.4	--	--	0	--	--
1976	--	0	0	22.4	--	0	0	0	0
1977	--	490.0	490.0	22.4	--	0	0	575.0	567.0
1978	--	1,506.0	1,506.0	22.4	--	1,679.0	1,679.0	1,053.0	1,946.0
1979	--	1,595.0	1,595.0	--	--	2,329.0	2,329.0	2,096.0	2,468.0
1980	--	1,472.0	1,472.0	22.4	--	2,523.0	2,523.0	1,839.0	2,584.0
1981	--	2,083.0	2,083.0	22.4	--	3,257.0	3,257.0	3,076.0	3,176.0
1982	--	1,418.0	1,418.0	22.4	--	2,644.0	2,644.0	1,703.0	2,420.0
1983	--	994.0	994.0	22.4	--	1,856.0	1,856.0	2,266.0	1,851.0
1984	--	651.0	651.0	22.4	--	139.0	139.0	1,795.0	2,358.0
1985	--	600.0	600.0	22.4	--	1,954.0	1,954.0	1,059.0	1,863.0
1986	--	50.0	50.0	22.4	--	2,148.0	2,148.0	1,270.0	595.0
1987	--	0	0	22.4	--	1,902.0	1,902.0	667.0	804.0
1988	--	229.0	229.0	22.4	--	2,057.0	2,057.0	1,781.0	975.0
1989	--	0	0	22.4	--	2,189.0	2,189.0	2,104.0	676.0
1990	--	0	0	22.4	--	2,099.0	2,099.0	2,437.0	0
1991	1,799.0	-1,799.0	0	0	2,161.0	-2,161.0	0	0	0
1992	--	0	0	--	--	0	0	0	253.0

PWS-0197-0083

Table 19. Water-use information for self-supplied water users in Antelope Valley by water-supply sources, 1946-92--Continued

Year	Blalock-Eddy Ranch Corporation	Blua, Andrew	Bonnie AC Ranch			Boy Scouts of America	Bozigian Ranch			Bryden, Lloyd W.	Buchanan, Thomas J. & Virginia A.
	Surface water	Ground water	Ground water	Surface water	Total	Surface water	Ground water	Pur- chased	Total	Ground water	Surface water
1946	--	0	0	--	0	--	--	--	0	0	0.5
1947	--	0	0	--	0	--	--	--	0	6.0	.5
1948	--	480.0	0	--	0	--	--	--	0	5.0	.5
1949	--	0	591.0	3,388.2	3,979.2	--	--	--	0	4.0	.5
1950	--	0	0	3,388.2	3,388.2	--	--	--	0	2.0	.5
1951	--	0	0	3,388.2	3,388.2	--	--	--	0	2.0	.5
1952	--	660.0	0	1,500.0	1,500.0	--	--	--	0	2.0	.5
1953	--	658.0	130.0	1,200.0	1,330.0	23.2	--	--	0	3.0	.5
1954	800.0	640.0	0	1,200.0	1,200.0	23.2	--	--	0	471.0	.5
1955	800.0	651.0	960.0	1,200.0	2,160.0	23.2	--	--	0	2.0	.5
1956	800.0	43.0	960.0	1,600.0	2,560.0	23.2	--	--	0	196.0	.5
1957	800.0	620.0	1,111.0	1,600.0	2,711.0	23.2	--	--	0	655.0	.5
1958	800.0	780.0	960.0	1,600.0	2,560.0	23.2	--	--	0	1,294.0	.5
1959	1,000.0	809.0	960.0	1,500.0	2,460.0	23.2	--	--	0	1,104.0	.5
1960	850.0	2,700.0	960.0	1,500.0	2,460.0	23.2	--	--	0	801.0	.5
1961	1,100.0	20.0	960.0	1,500.0	2,460.0	23.2	--	--	0	515.0	.5
1962	900.0	960.0	1,796.0	1,500.0	3,296.0	23.2	--	--	0	953.0	.5
1963	--	3,220.0	960.0	1,500.0	2,460.0	23.2	--	--	0	2,441.0	.5
1964	680.0	1,100.0	960.0	1,500.0	2,460.0	23.2	--	--	0	1,248.0	.5
1965	690.0	1,210.0	960.0	1,500.0	2,460.0	23.2	--	--	0	0	.5
1966	700.0	1,797.0	960.0	1,500.0	2,460.0	23.2	--	--	0	1,250.0	.5
1967	2,171.9	0	1,380.0	1,500.0	2,880.0	23.2	--	--	0	985.0	.5
1968	2,171.9	4,630.0	960.0	3,388.2	4,348.2	23.2	--	--	0	2,162.0	.5
1969	2,171.9	3,330.0	960.0	3,388.2	4,348.2	23.2	--	--	0	943.0	.5
1970	2,171.9	4,650.0	960.0	3,388.2	4,348.2	23.2	--	--	0	761.0	.5
1971	2,171.9	4,650.0	940.0	3,388.2	4,328.2	23.2	--	--	0	0	.5
1972	2,171.9	764.0	1,018.0	3,388.2	4,406.2	23.2	--	--	0	0	--
1973	2,171.9	0	960.0	3,388.2	4,348.2	23.2	--	--	0	0	--
1974	2,171.9	0	960.0	3,388.2	4,348.2	23.2	--	--	0	0	--
1975	2,171.9	4,700.0	480.0	3,388.2	3,868.2	30.0	--	--	0	0	--
1976	2,171.9	4,700.0	960.0	3,388.2	4,348.2	--	--	0	0	0	--
1977	2,171.9	4,700.0	960.0	3,388.2	4,348.2	--	--	192.0	192.0	80.0	--
1978	2,171.9	0	960.0	3,388.2	4,348.2	23.2	--	1,328.0	1,328.0	0	0
1979	374.0	0	960.0	--	960.0	23.2	--	1,634.0	1,634.0	0	--
1980	375.0	0	960.0	375.0	1,335.0	23.2	--	1,582.0	1,582.0	0	--
1981	638.0	0	960.0	638.0	1,598.0	23.2	--	1,853.0	1,853.0	0	--
1982	869.0	0	960.0	869.0	1,829.0	23.2	--	1,570.0	1,570.0	0	--
1983	934.0	0	960.0	934.0	1,894.0	23.2	--	1,220.0	1,220.0	0	--
1984	1,104.0	0	0	1,104.0	1,104.0	23.2	--	1,007.0	1,007.0	0	--
1985	1,184.0	0	960.0	1,184.0	2,144.0	--	--	1,075.0	1,075.0	0	--
1986	1,065.0	0	480.0	1,065.0	1,545.0	--	--	607.0	607.0	0	--
1987	880.0	0	0	692.0	692.0	--	--	2.0	2.0	0	--
1988	979.0	0	0	979.0	979.0	23.2	--	2.0	2.0	0	--
1989	692.0	0	0	880.0	880.0	23.2	--	0	0	0	--
1990	--	0	0	582.0	582.0	23.2	--	0	0	0	--
1991	--	0	0	378.0	378.0	--	896.0	-896.0	0	0	--
1992	--	0	0	--	0	--	--	0	0	0	--

PWS-0197-0084

Table 19. Water-use information for self-supplied water users in Antelope Valley by water-supply sources, 1946-92--Continued

Year	Bushnell, David P.	Calandri Ranch			California Portland Cement Company			California Resources Enterprises Incorporated	Calmat Company	Cameo Ranching Company
	Ground water	Ground water	Pur- chased	Total	Ground water	Surface water	Total	Ground water	Ground water	Ground water
1946	0	--	--	0	0	--	0	0	0	0
1947	600.0	--	--	0	0	--	0	0	0	500.0
1948	26.0	--	--	0	0	--	0	0	0	150.0
1949	245.0	--	--	0	0	--	0	0	0	1,820.0
1950	600.0	--	--	0	0	--	0	0	0	356.0
1951	613.0	--	--	0	0	--	0	45.0	0	25.0
1952	600.0	--	--	0	0	--	0	0	0	1,752.0
1953	1,362.0	--	--	0	0	--	0	183.0	0	426.0
1954	8.0	--	--	0	0	--	0	0	0	1,065.0
1955	570.0	--	--	0	0	--	0	0	0	1,731.0
1956	358.0	--	--	0	0	--	0	1,349.0	0	1,640.0
1957	744.0	--	--	0	0	579.2	579.2	752.0	0	476.0
1958	140.0	--	--	0	0	579.2	579.2	16.0	9.0	651.0
1959	425.0	--	--	0	0	579.2	579.2	575.0	100.0	73.0
1960	471.0	--	--	0	0	579.2	579.2	1,251.0	0	1,329.0
1961	161.0	--	--	0	0	579.2	579.2	1,317.0	0	1,672.0
1962	168.0	--	--	0	0	579.2	579.2	0	0	669.0
1963	794.0	--	--	0	0	579.2	579.2	656.0	0	594.0
1964	573.0	--	--	0	0	579.2	579.2	1,158.0	406.0	1,663.0
1965	1,729.0	--	--	0	0	579.2	579.2	2,630.0	418.0	1,614.0
1966	1.0	--	--	0	0	438.2	438.2	75.0	1,553.0	607.0
1967	584.0	--	--	0	0	502.9	502.9	2,175.0	1,000.0	2,003.0
1968	1,409.0	--	--	0	0	--	0	3,281.0	60.0	1,512.0
1969	0	--	--	0	0	--	0	620.0	462.0	1,571.0
1970	1,287.0	--	--	0	0	--	0	1,223.0	150.0	1,706.0
1971	1,287.0	--	--	0	0	272.0	272.0	1,673.0	266.0	1,791.0
1972	0	--	--	0	0	276.0	276.0	3,616.0	21.0	1,189.0
1973	863.0	--	--	0	0	416.3	416.3	2,408.0	207.0	704.0
1974	863.0	--	--	0	0	457.2	457.2	2,556.0	199.0	1,612.0
1975	863.0	--	--	0	0	337.5	337.5	2,737.0	193.0	1,594.0
1976	0	--	0	0	0	--	0	2,638.0	150.0	1,754.0
1977	863.0	--	0	0	0	--	0	2,863.0	202.0	1,756.0
1978	862.0	--	0	0	0	--	0	2,566.0	211.0	3,551.0
1979	862.0	--	0	0	550.0	669.0	1,219.0	2,566.4	273.0	1,827.0
1980	862.0	--	0	0	0	615.6	615.6	2,174.6	303.5	1,779.0
1981	862.5	--	522.0	522.0	0	475.6	475.6	2,020.0	276.3	1,629.6
1982	862.5	--	0	0	0	288.4	288.4	2,706.0	316.7	1,525.0
1983	860.0	--	1.0	1.0	0	220.3	220.3	2,400.0	565.7	1,265.4
1984	862.5	--	455.0	455.0	0	204.1	204.1	3,640.0	34.8	1,750.8
1985	862.5	--	0	0	0	191.8	191.8	3,399.0	560.4	1,636.9
1986	862.5	--	0	0	0	172.8	172.8	3,560.6	552.5	0
1987	862.5	--	0	0	0	175.5	175.5	3,633.2	313.1	1,339.8
1988	0	--	177.0	177.0	0	170.3	170.3	2,050.0	0	0
1989	0	--	0	0	0	180.7	180.7	0	278.3	0
1990	0	--	0	0	0	168.2	168.2	0	0	1,365.1
1991	0	1,074.0	-1,074.0	0	0	--	0	0	397.4	1,248.3
1992	0	--	0	0	0	--	0	0	0	0

PWS-0197-0085

Table 19. Water-use information for self-supplied water users in Antelope Valley by water-supply sources, 1946-92--Continued

Year	Carter, Maurice R.	Castronova, Daniel	Caton, Robert and Richard	Christoff, Chris A.	Church of Latter Day Saints	Circle JM Ranch	City Ranch	Clark, Dick
	Ground water	Purchased	Ground water	Ground water	Ground water	Ground water	Purchased	Purchased
1946	0	--	0	0	0	0	--	--
1947	0	--	0	0	0	0	--	--
1948	0	--	960	0	0	0	--	--
1949	0	--	7.0	0	0	0	--	--
1950	0	--	729.0	0	0	270.0	--	--
1951	0	--	786.0	0	85.0	270.0	--	--
1952	0	--	541.0	0	85.0	270.0	--	--
1953	1,140.0	--	317.0	0	550.0	313.0	--	--
1954	0	--	154.0	0	662.0	410.0	--	--
1955	100	--	657.0	0	85.0	270.0	--	--
1956	100	--	463.0	0	85.0	270.0	--	--
1957	1,278.0	--	968.0	0	85.0	270.0	--	--
1958	0	--	572.0	0	80.0	268.0	--	--
1959	0	--	106.0	0	56.0	270.0	--	--
1960	0	--	1,212.0	0	38.0	270.0	--	--
1961	0	--	14.0	0	64.0	612.0	--	--
1962	0	--	0	0	300.0	1,080.0	--	--
1963	63.0	--	478.0	0	97.0	1,080.0	--	--
1964	0	--	625.0	0	97.0	1,080.0	--	--
1965	0	--	1,009.0	0	97.0	1,080.0	--	--
1966	0	--	917.0	0	100.0	1,080.0	--	--
1967	691.0	--	209.0	0	117.0	1,080.0	--	--
1968	67.0	--	860.0	0	125.0	297.0	--	--
1969	0	--	1,276.0	10	62.0	1,080.0	--	--
1970	0	--	264.0	0	90.0	1,080.0	--	--
1971	0	--	250.0	0	90.0	1,080.0	--	--
1972	0	--	0	0	0	446.0	--	--
1973	0	--	0	905.0	125.0	1,050.0	--	--
1974	0	--	100.0	935.0	125.0	1,050.0	--	--
1975	0	--	120.0	904.0	0	1,050.0	--	--
1976	0	0	130.0	936.0	10.0	1,050.0	405.0	0
1977	0	0	140.0	905.0	300.0	1,050.0	997.0	0
1978	0	0	110.0	962.0	300.0	991.0	934.0	0
1979	0	0	0	990.0	300.0	0	930.0	0
1980	0	0	0	1,193.0	360.0	0	655.0	0
1981	0	0	0	954.0	360.0	0	966.0	0
1982	0	0	0	328.0	180.0	0	8.0	0
1983	0	0	0	0	200.0	0	20.0	0
1984	0	0	0	0	200.0	0	2.0	0
1985	0	0	0	0	135.0	0	218.0	0
1986	0	0	0	75.0	150.0	0	0	0
1987	0	0	0	77.0	150.0	0	0	0
1988	0	0	0	0	0	0	0	0
1989	0	2.0	0	129.0	150.0	0	0	0
1990	0	7.0	0	121.0	150.0	0	0	4.0
1991	0	7.0	0	131.0	150.0	0	0	6.0
1992	0	7.0	0	0	0	0	0	6.0

PWS-0197-0086

Table 19. Water-use information for self-supplied water users in Antelope Valley by water-supply sources, 1946-92--Continued

Year	Clayton, Richard M.	Cole, J.G., and Sons	Coor-Pender, R.L. and Ruth B.	Corpus, Cenon and Regina	Davis, Shelton	Delia, Joseph E.	Derosier, Lionel P. and Patricia
	Ground water	Ground water	Ground water	Ground water	Ground water	Ground water	Ground water
1946	0	0	0	0	0	0	0
1947	0	784.0	0	548.0	0	239.0	0
1948	0	420.0	0	548.0	0	239.0	0
1949	0	503.0	0	440.0	0	239.0	0
1950	0	780.0	0	548.0	0	239.0	0
1951	0	950.0	0	388.0	0	876.0	0
1952	0	1,470.0	0	548.0	0	239.0	0
1953	0	965.0	0	1,498.0	0	239.0	0
1954	0	272.0	0	1,120.0	0	90.0	0
1955	0	1,125.0	0	548.0	0	239.0	0
1956	0	844.0	0	367.0	0	387.0	0
1957	0	85.0	0	480.0	0	239.0	0
1958	0	128.0	0	480.0	0	239.0	0
1959	0	700.0	0	480.0	0	0	0
1960	0	1,492.0	0	480.0	1,307.0	120.0	0
1961	0	1,475.0	0	0	800.0	120.0	0
1962	0	1,496.0	0	1,919.0	1,168.0	450.0	0
1963	0	460.0	0	400.0	674.0	0	0
1964	0	1,172.0	0	480.0	674.0	0	0
1965	0	700.0	0	480.0	13,000.0	0	0
1966	0	79.0	0	0	1,167.0	525.0	0
1967	0	660.0	8.0	480.0	1,167.0	89.0	0
1968	0	1,235.0	10.0	480.0	952.0	1,690.0	0
1969	0	1,200.0	18.0	480.0	907.0	14.0	0
1970	0	1,175.0	20.0	480.0	831.0	0	0
1971	0	500.0	14.0	480.0	1,002.0	1,114.0	0
1972	0	120.0	46.0	0	214.0	0	0
1973	0	420.0	30.0	480.0	995.0	646.0	0
1974	0	410.0	33.0	400.0	540.0	565.0	0
1975	0	400.0	36.0	480.0	976.0	400.0	0
1976	0	380.0	0	480.0	955.0	636.0	0
1977	0	950.0	33.0	480.0	830.0	636.0	0
1978	0	900.0	37.0	180.0	893.0	2.0	0
1979	3.1	400.0	0	935.3	760.0	3.0	0
1980	2.3	0	0	0	960.0	0	0
1981	2.3	0	0	0	0	0	0
1982	2.3	0	0	0	0	0	0
1983	2.3	0	0	0	0	.7	0
1984	2.3	0	0	0	0	0	0
1985	2.3	0	0	0	0	1.7	0
1986	2.3	0	0	0	0	2.2	0
1987	2.3	0	0	0	0	4.5	0
1988	2.3	0	0	0	0	0	1.5
1989	0	0	0	0	0	2.2	0
1990	0	0	0	.2	0	0	0
1991	1.5	0	0	0	0	32.4	0
1992	0	0	0	0	0	0	0

PWS-0197-0087

Table 19. Water-use information for self-supplied water users in Antelope Valley by water-supply sources, 1946-92--Continued

Year	Derrick, Olin E.	Dustin, Doug	DVM	Elliott, Jay E., and others	EPIC/Smith Development Company	Fabe	Fattaminia Family Trust, and others	Freund, Jerry
	Ground water	Ground water	Ground water	Surface water	Ground water	Purchased	Surface water	Purchased
1946	0	0	0	0.2	0	--	--	--
1947	0	240.0	0	.2	0	--	--	--
1948	0	895.0	300.0	.6	0	--	--	--
1949	0	240.0	490.0	.6	0	--	--	--
1950	0	240.0	1,200.0	.5	0	--	--	--
1951	515.0	240.0	480.0	.5	72.0	--	--	--
1952	257.0	28.0	1,440.0	.5	30.0	--	--	--
1953	70.0	240.0	1,970.0	.5	190.0	--	--	--
1954	0	55.0	1,780.0	.5	56.0	--	--	--
1955	520.0	185.0	1,780.0	.5	72.0	--	--	--
1956	520.0	171.0	1,800.0	.5	480.0	--	--	--
1957	337.0	212.0	738.0	.5	201.0	--	--	--
1958	520.0	180.0	1,038.0	.5	806.0	--	--	--
1959	0	195.0	287.0	.5	25.0	--	--	--
1960	290.0	248.0	1,925.0	.5	76.0	--	--	--
1961	1,089.0	203.0	1,485.0	.5	100.0	--	--	--
1962	903.0	232.0	1,450.0	.5	13.0	--	--	--
1963	237.0	228.0	826.0	.4	37.0	--	1,498.8	--
1964	903.0	234.0	1,100.0	.4	35.0	--	1,498.8	--
1965	560.0	234.0	1,925.0	.4	8.0	--	1,498.8	--
1966	15,985.0	0	1,383.0	.5	0	--	--	--
1967	0	234.0	1,200.0	.5	0	--	--	--
1968	299.0	283.0	1,594.0	.5	0	--	--	--
1969	201.0	308.0	2,400.0	1.6	0	--	--	--
1970	1,000.0	234.0	2,400.0	1.6	38.0	--	--	--
1971	0	0	0	1.6	41.0	--	--	--
1972	6.0	57.0	1,153.0	--	628.0	--	--	--
1973	0	0	0	--	45.0	--	--	--
1974	0	0	0	--	36.0	--	--	--
1975	1,000.0	0	0	--	0	--	--	--
1976	1,000.0	0	0	--	0	0	--	0
1977	1,200.0	0	0	--	0	0	--	0
1978	0	0	0	--	0	196.0	--	0
1979	0	0	0	1.6	30.0	408.0	--	0
1980	0	0	0	1.6	10.0	410	1,809.9	0
1981	0	0	0	1.6	75.0	534.0	1,809.9	0
1982	0	0	0	--	75.0	536.0	1,809.9	0
1983	0	0	0	--	75.0	0	--	0
1984	0	0	0	--	0	405.0	--	0
1985	0	0	0	--	0	0	--	0
1986	0	0	0	--	75.0	0	--	0
1987	0	0	0	--	75.0	0	--	4.0
1988	0	0	0	--	0	0	--	9.0
1989	0	0	0	--	0	0	--	14.0
1990	0	0	0	--	0	0	--	6.0
1991	0	0	0	--	0	0	--	7.0
1992	0	0	0	--	0	0	--	1.0

Table 19. Water-use information for self-supplied water users in Antelope Valley by water-supply sources, 1946-92--Continued

Year	Frisella, Josef	Fuson	Gagik, Galstian, Trustee	Gallin, Leo and Ruth Morton	Gateway Triangle Properties	Gaviota Incorporated	Graham, John, and others
	Ground water	Purchased	Ground water	Ground water	Surface water	Surface water	Surface water
1946	0	--	0	0	39.1	11.2	--
1947	0	--	0	0	39.1	11.2	--
1948	0	--	0	0	39.1	11.2	--
1949	0	--	250.0	0	39.1	11.2	--
1950	0	--	0	0	39.1	11.2	--
1951	0	--	0	480.0	39.1	11.2	--
1952	0	--	606.0	0	39.1	11.2	--
1953	0	--	70.0	1,288.0	39.1	11.2	--
1954	0	--	948.0	1,250.0	39.1	11.2	--
1955	0	--	0	1,200.0	39.1	11.2	--
1956	0	--	0	1,200.0	39.1	11.2	--
1957	0	--	701.0	156.0	39.1	11.2	--
1958	0	--	77.0	0	39.1	11.2	--
1959	0	--	36.0	0	39.1	11.2	--
1960	0	--	1,170.0	6.0	39.1	11.2	--
1961	0	--	1,170.0	0	39.1	11.2	--
1962	0	--	433.0	0	39.1	14.5	--
1963	0	--	377.0	0	39.1	14.5	--
1964	0	--	120.0	360.0	39.1	14.5	--
1965	0	--	1,170.0	360.0	39.1	11.2	5.1
1966	0	--	1,170.0	0	39.1	11.2	5.1
1967	0	--	1,170.0	851.0	39.1	11.2	5.1
1968	0	--	1,170.0	1,575.0	39.1	--	5.1
1969	0	--	1,170.0	0	39.1	--	5.1
1970	0	--	1,300.0	0	39.1	--	5.1
1971	0	--	1,300.0	0	39.1	--	5.1
1972	0	--	1,122.0	0	39.1	--	5.1
1973	0	--	1,300.0	0	39.1	--	5.1
1974	0	--	1,300.0	0	39.1	--	5.1
1975	0	--	1,000.0	0	39.1	--	5.1
1976	0	8,814.0	1,000.0	0	39.1	--	5.1
1977	0	5,760.0	1,000.0	0	39.1	--	5.1
1978	0	5,569.0	950.0	0	39.1	--	5.1
1979	0	5,467.0	950.0	0	39.1	--	5.1
1980	0	6,527.0	950.0	0	39.1	--	--
1981	0	6,985.0	1,000.0	0	39.1	11.2	1.1
1982	0	2,742.0	1,100.0	0	39.1	11.2	1.1
1983	0	8.0	1,100.0	0	39.1	11.2	1.1
1984	0	0	708.0	0	39.1	10.2	5.1
1985	0	0	708.0	0	39.1	10.2	5.1
1986	0	0	740.0	0	39.1	10.2	5.1
1987	0	0	860.0	0	--	11.2	5.1
1988	0	0	740.0	0	--	11.2	5.1
1989	0	0	1,050.0	0	--	11.2	5.1
1990	0	0	960.0	0	--	11.2	--
1991	11.4	-5,065.0	0	0	--	--	--
1992	0	0	0	0	--	--	--

Table 19. Water-use information for self-supplied water users in Antelope Valley by water-supply sources, 1946-92--Continued

Year	Grainger, Donald L.	Griffen, Laura	Groven, Dennis L.	Harter, Leo A.	Hathaway Ranch	Healy Enterprises Incorporated	Hee, Thorton, and Patti	Hicks, David R.	Heiner, Lucius B.
	Ground water	Ground water	Ground water	Ground water	Ground water	Ground water	Ground water	Ground water	Ground water
1946	0	0	0	0	0	0	0	0	0
1947	0	0	0	0	0	0	0	0	0
1948	0	1,820.0	0	0	0	0	258.0	0	0
1949	0	420.0	0	0	0	794.0	730.0	0	0
1950	0	3,360.0	0	0	0	0	0	0	0
1951	0	3,360.0	0	250.0	0	0	560.0	0	0
1952	0	3,360.0	0	500.0	0	1,560.0	220.0	0	0
1953	0	840.0	0	500.0	0	350.0	220.0	0	476.0
1954	0	3,360.0	0	500.0	1,304.0	100.0	672.0	0	0
1955	0	2,880.0	0	500.0	1,304.0	0	140.0	0	34.0
1956	0	2,820.0	0	550.0	1,304.0	656.0	840.0	0	0
1957	375.0	500.0	0	678.0	1,304.0	278.0	84.0	0	39.0
1958	375.0	150.0	0	630.0	548.0	19.0	84.0	0	42.0
1959	0	420.0	500.0	650.0	228.0	491.0	270.0	0	3.0
1960	0	420.0	500.0	650.0	1,304.0	14.0	84.0	0	43.0
1961	0	600.0	8.0	615.0	1,304.0	575.0	900.0	0	200.0
1962	0	480.0	20.0	762.0	1,304.0	480.0	84.0	0	40.0
1963	0	480.0	500.0	490.0	0	3.0	84.0	0	40.0
1964	882.0	550.0	500.0	28.0	2,443.0	583.0	175.0	0	0
1965	1,200.0	420.0	500.0	650.0	651.0	0	84.0	0	35.0
1966	1,155.0	450.0	123.0	650.0	1,306.0	0	84.0	0	35.0
1967	419.0	444.0	20.0	618.0	1,920.0	0	84.0	0	30.0
1968	0	450.0	500.0	515.0	709.0	1	84.0	0	20.0
1969	0	450.0	11.0	980.0	2,827.0	0	84.0	0	20.0
1970	0	450.0	0	430.0	754.0	0	84.0	0	15.0
1971	0	450.0	500.0	20.0	803.0	0	84.0	0	15.0
1972	0	0	465.0	12.0	401.0	0	0	0	499.0
1973	0	450.0	2,250.0	0	841.0	0	84.0	0	15.0
1974	0	450.0	500.0	0	888.0	0	190.0	0	0
1975	0	450.0	500.0	0	891.0	0	102.0	0	10.0
1976	0	450.0	500.0	0	890.0	0	84.0	0	0
1977	0	450.0	500.0	0	892.0	0	84.0	.1	0
1978	0	450.0	500.0	0	868.0	0	84.0	.1	10.0
1979	0	450.0	500.0	0	0	0	0	.1	0
1980	0	450.0	500.0	0	789.0	0	0	.1	0
1981	0	450.0	600.0	0	790.0	0	0	.1	10.0
1982	0	450.0	600.0	0	785.0	0	0	.1	25.0
1983	0	450.0	600.0	0	5.0	0	0	.1	0
1984	0	450.0	600.0	0	5.0	0	0	.1	0
1985	0	450.0	600.0	0	5.0	0	0	.1	9.5
1986	0	450.0	600.0	0	0	0	0	.1	0
1987	0	450.0	700.0	0	0	0	0	.1	0
1988	0	450.0	600.0	0	0	0	0	.1	0
1989	0	450.0	600.0	0	0	0	0	0	0
1990	0	450.0	600.0	0	0	0	0	0	20.0
1991	0	450.0	600.0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0	0

PWS-0197-0090

Table 19. Water-use information for self-supplied water users in Antelope Valley by water-supply sources, 1946-92--Continued

Year	Hines, Robert G.	Hughes	Hughes Development Corporation	Hughes, Rodger	Iarussi, Armando	Johnson, Malachi S.	Johnson, Arch D.	Kadivar, Steve	Kaufman and Broad Land Company		Total
	Ground water	Pur- chased	Pur- chased	Pur- chased	Pur- chased	Ground water	Ground water	Ground water	Ground water	Pur- chased	
1946	0	--	--	--	--	0	0	0	0	--	0
1947	268.0	--	--	--	--	0	0	0	0	--	0
1948	268.0	--	--	--	--	0	0	0	0	--	0
1949	480.0	--	--	--	--	0	0	0	0	--	0
1950	520.0	--	--	--	--	0	0	0	0	--	0
1951	569.0	--	--	--	--	0	0	0	0	--	0
1952	789.0	--	--	--	--	0	0	0	0	--	0
1953	643.0	--	--	--	--	0	0	0	0	--	0
1954	697.0	--	--	--	--	0	0	0	0	--	0
1955	750.0	--	--	--	--	0	0	0	0	--	0
1956	750.0	--	--	--	--	0	0	0	0	--	0
1957	720.0	--	--	--	--	0	0	0	0	--	0
1958	712.0	--	--	--	--	0	0	0	0	--	0
1959	705.0	--	--	--	--	0	0	0	0	--	0
1960	733.0	--	--	--	--	0	0	0	0	--	0
1961	250.0	--	--	--	--	0	0	0	0	--	0
1962	707.0	--	--	--	--	0	0	0	0	--	0
1963	680.0	--	--	--	--	0	0	0	0	--	0
1964	1,264.0	--	--	--	--	0	0	0	0	--	0
1965	1,320.0	--	--	--	--	0	0	0	0	--	0
1966	500.0	--	--	--	--	0	0	0	0	--	0
1967	660.0	--	--	--	--	0	0	1,080.0	0	--	0
1968	654.0	--	--	--	--	0	10.0	1,080.0	0	--	0
1969	625.0	--	--	--	--	0	10.0	1,080.0	0	--	0
1970	600.0	--	--	--	--	35.0	10.0	1,452.0	0	--	0
1971	1,100.0	--	--	--	--	0	10.0	1,452.0	0	--	0
1972	0	--	--	--	--	654.0	10.0	0	0	--	0
1973	1,005.0	--	--	--	--	10.0	10.0	0	0	--	0
1974	990.0	--	--	--	--	10.0	10.0	0	0	--	0
1975	1,020.0	--	--	--	--	0	10.0	540.0	0	--	0
1976	1,000.0	1,712.0	0	0	0	0	10.0	240.0	0	0	0
1977	350.0	1,633.0	606.0	0	1,188.0	0	106.0	745.0	145.7	0	145.7
1978	0	512.0	646.0	0	1,291.0	0	67.0	745.0	92.7	0	92.7
1979	0	1,897.0	1,136.0	0	1,435.0	0	67.7	745.0	138.7	0	138.7
1980	0	2,455.0	1,768.0	0	1,393.0	0	55.3	0	147.7	0	147.7
1981	0	3,072.0	1,838.0	0	1,468.0	0	67.7	495.0	224.7	0	224.7
1982	0	0	0	0	1,213.0	0	67.7	0	423.7	0	423.7
1983	0	0	0	0	748.0	0	0	0	0	0	0
1984	0	0	806.0	0	381.0	0	67.4	0	0	0	0
1985	0	0	746.0	4.0	339.0	0	67.7	0	0	0	0
1986	0	0	584.0	8.0	10.0	0	67.7	0	0	0	0
1987	0	0	634.0	11.0	12.0	0	84.9	0	19.0	0	19.0
1988	0	0	641.0	8.0	12.0	0	84.9	0	0	156.0	156.0
1989	0	0	637.0	12.0	11.0	0	84.9	0	0	213.0	213.0
1990	0	0	0	12.0	11.0	0	84.9	0	0	61.0	61.0
1991	0	-1,398.0	0	6.0	0	0	84.9	0	0	1.0	1.0
1992	0	0	0	7.0	2.0	0	0	0	0	0	0

PWS-0197-0091

Table 19. Water-use information for self-supplied water users in Antelope Valley by water-supply sources, 1946-92--Continued

Year	Kellerman, Pat	Kelly Ranch	Kindig, George B.	Kindig, Paul S.	Kieksted Tree Farm	Kuete, Les	Kungl, Karl	Kyle, J.W. and G.W.	Lade, R.M./ Hartford Management Company
	Purchased	Purchased	Ground water	Ground water	Purchased	Purchased	Ground water	Ground water	Ground water
1946	--	--	0	0	--	--	0	0	0
1947	--	--	0	0	--	--	577.0	3,857.0	520.0
1948	--	--	0	0	--	--	560.0	3,494.0	520.0
1949	--	--	1,230.0	0	--	--	570.0	3,173.0	702.0
1950	--	--	0	0	--	--	540.0	3,857.0	702.0
1951	--	--	409.0	0	--	--	578.0	2,484.0	702.0
1952	--	--	0	0	--	--	740.0	2,878.0	116.0
1953	--	--	1,269.0	0	--	--	220.0	3,326.0	561.0
1954	--	--	473.0	0	--	--	563.0	3,290.0	702.0
1955	--	--	638.0	0	--	--	578.0	4,656.0	702.0
1956	--	--	347.0	435.0	--	--	672.0	3,023.0	654.0
1957	--	--	425.0	402.0	--	--	336.0	817.0	839.0
1958	--	--	44.0	479.0	--	--	229.0	2,534.0	714.0
1959	--	--	0	480.0	--	--	605.0	4,793.0	694.0
1960	--	--	600.0	518.0	--	--	582.0	3,993.0	820.0
1961	--	--	1,008.0	512.0	--	--	260.0	3,685.0	756.0
1962	--	--	93.0	511.0	--	--	140.0	3,431.0	793.0
1963	--	--	36.0	502.0	--	--	254.0	3,185.0	710.0
1964	--	--	756.0	486.0	--	--	636.0	4,591.0	671.0
1965	--	--	478.0	492.0	--	--	550.0	4,164.0	695.0
1966	--	--	490.0	406.0	--	--	630.0	4,200.0	684.0
1967	--	--	510.0	540.0	--	--	84.0	3,120.0	1,178.0
1968	--	--	550.0	528.0	--	--	585.0	5,012.0	0
1969	--	--	550.0	492.0	--	--	580.0	4,460.0	560.0
1970	--	--	500.0	506.0	--	--	570.0	2,254.0	898.0
1971	--	--	550.0	478.0	--	--	490.0	5,111.0	895.0
1972	--	--	0	0	--	--	0	1,593.0	0
1973	--	--	520.0	615.0	--	--	400.0	4,862.0	560.0
1974	--	--	540.0	496.0	--	--	400.0	4,028.0	560.0
1975	--	--	560.0	514.0	--	--	400.0	3,959.0	600.0
1976	0	0	500.0	478.0	0	0	400.0	3,696.0	0
1977	0	1,707.0	1,020.0	416.0	0	0	420.0	4,689.0	0
1978	0	3,795.0	1,050.0	437.0	0	0	300.0	4,938.0	0
1979	0	4,654.0	0	416.0	0	0	0	5,550.0	0
1980	0	4,819.0	730.0	440.0	0	1.0	270.0	5,697.4	0
1981	0	4,929.0	680.0	390.0	0	4.0	270.0	5,058.2	0
1982	0	4,613.0	0	392.0	0	9.0	200.0	6,024.8	0
1983	0	2,972.0	385.0	392.0	0	6.0	50.0	7,108.8	0
1984	0	2,440.0	600.0	395.0	0	6.0	0	6,023.2	0
1985	0	2,377.0	620.0	385.0	23.0	6.0	25.0	6,939.6	0
1986	0	1,267.0	600.0	390.0	56.0	6.0	20.0	6,939.6	0
1987	0	1,992.0	620.0	390.0	75.0	6.0	15.0	7,128.6	0
1988	0	1,900.0	0	0	90.0	6.0	0	795.6	0
1989	0	2,166.0	590.0	150.0	122.0	6.0	15.0	7,179.0	0
1990	5.0	1,708.0	20.0	10.0	0	6.0	15.0	6,927.8	0
1991	6.0	0	0	0	0	6.0	15.0	7,294.0	0
1992	6.0	0	0	0	0	6.0	0	0	0

PWS-0197-0092

Table 19. Water-use information for self-supplied water users in Antelope Valley by water-supply sources, 1946-92--Continued

Year	Lake, Twyla and Larry	Lane, Frank A.			Larsen Brothers			Leona Valley Estates Limited Management	Leviste Systems	Littlerock Aggregate Company	Llarena, Albert
	Ground water	Ground water	Pur- chased	Total	Ground water	Pur- chased	Total	Purchased	Ground water	Ground water	Ground water
1946	0	0	--	0	0	--	0	--	0	0	0
1947	0	0	--	0	18.0	--	18.0	--	0	0	1,786.0
1948	1,329.0	0	--	0	22.0	--	22.0	--	266.0	0	1,303.0
1949	539.0	0	--	0	21.0	--	21.0	--	75.0	0	1,447.0
1950	882.0	0	--	0	276.0	--	276.0	--	546.0	0	1,786.0
1951	1,628.0	0	--	0	261.0	--	261.0	--	36.0	0	1,952.0
1952	1,512.0	0	--	0	254.0	--	254.0	--	26.0	0	1,786.0
1953	1,769.0	0	--	0	250.0	--	250.0	--	161.0	0	1,786.0
1954	1,545.0	0	--	0	322.0	--	322.0	--	1,252.0	30.0	1,164.0
1955	2,856.0	0	--	0	244.0	--	244.0	--	0	0	1,786.0
1956	1,580.0	0	--	0	231.0	--	231.0	--	100.0	205.0	1,862.0
1957	2,418.0	0	--	0	92.0	--	92.0	--	18.0	191.0	1,910.0
1958	2,530.0	0	--	0	455.0	--	455.0	--	100.0	148.0	2,012.0
1959	496.0	0	--	0	126.0	--	126.0	--	10.0	30.0	985.0
1960	2,912.0	0	--	0	95.0	--	95.0	--	1,008.0	124.0	2,010.0
1961	2,837.0	0	--	0	108.0	--	108.0	--	0	22.0	2,017.0
1962	1,301.0	0	--	0	102.0	--	102.0	--	1,008.0	128.0	439.0
1963	2,060.0	0	--	0	90.0	--	90.0	--	1,008.0	172.0	920.0
1964	1,920.0	0	--	0	697.0	--	697.0	--	1,008.0	172.0	1,015.0
1965	2,584.0	0	--	0	691.0	--	691.0	--	0	172.0	0
1966	1,328.0	0	--	0	570.0	--	570.0	--	0	172.0	500.0
1967	2,342.0	0	--	0	317.0	--	317.0	--	0	172.0	927.0
1968	1,124.0	0	--	0	148.0	--	148.0	--	9.0	172.0	0
1969	260.0	0	--	0	170.0	--	170.0	--	600.0	1,034.0	762.0
1970	2,674.0	411.0	--	411.0	272.0	--	272.0	--	600.0	1,034.0	1,120.0
1971	2,671.0	411.0	--	411.0	291.0	--	291.0	--	0	1,034.0	0
1972	1,341.0	22.0	--	22.0	0	--	0	--	600.0	0	0
1973	0	380.0	--	380.0	775.0	--	775.0	--	600.0	1,034.0	0
1974	0	365.0	--	365.0	500.0	--	500.0	--	350.0	1,034.0	0
1975	0	365.0	--	365.0	83.0	--	83.0	--	350.0	1,034.0	0
1976	1,960.0	250.0	0	250.0	432.0	0	432.0	0	350.0	1,034.0	0
1977	1,962.0	250.0	0	250.0	828.0	2,580.0	3,408.0	0	350.0	1,034.0	0
1978	1,962.0	0	0	0	847.0	1,151.0	1,998.0	0	350.0	1,034.0	0
1979	1,818.0	0	0	0	833.0	1,579.0	2,412.0	2.0	350.0	1,034.0	0
1980	2,058.0	0	17.0	17.0	835.0	2,066.0	2,901.0	2.0	350.0	1,034.0	0
1981	2,058.0	0	28.0	28.0	854.0	2,965.0	3,819.0	16.0	350.0	1,034.0	0
1982	2,058.0	0	29.0	29.0	620.0	1,996.0	2,616.0	7.0	350.0	131.4	0
1983	2,058.0	0	37.0	37.0	657.0	1,029.0	1,686.0	6.0	350.0	132.0	0
1984	2,058.0	0	41.0	41.0	545.0	136.0	681.0	7.0	350.0	132.0	0
1985	2,058.0	0	42.0	42.0	594.0	2,114.0	2,708.0	4.0	350.0	132.0	0
1986	2,058.0	0	48.0	48.0	355.0	785.0	1,140.0	3.0	0	132.0	0
1987	2,058.0	0	53.0	53.0	75.0	0	75.0	6.0	0	0	0
1988	0	960.0	76.0	1,036.0	0	0	0	9.0	0	0	0
1989	2,058.0	0	74.0	74.0	0	0	0	35.0	0	132.0	0
1990	2,052.0	960.0	73.0	1,033.0	0	0	0	10.0	0	132.0	0
1991	12.0	0	34.0	34.0	0	0	0	6.0	0	307.0	0
1992	0	0	31.0	31.0	0	0	0	4.0	0	0	0

PWS-0197-0093

Table 19. Water-use information for self-supplied water users in Antelope Valley by water-supply sources, 1946-92--Continued

Year	Los Angeles Department of Airports	Los Angeles Firemen's Relief Association	Margaretten, Joel	Mc Cormick, Raymond W.	Mescal Creek Water Trust	Miccolis, F.P./ Adele Bruno
	Ground water	Ground water	Surface water	Ground water	Surface water	Ground water
1946	0	0	3.4	0	--	0
1947	0	366.0	3.4	0	--	600.0
1948	0	1,745.0	3.4	705.0	--	600.0
1949	251.0	731.0	--	705.0	--	190.0
1950	0	616.0	--	705.0	--	600.0
1951	0	1,825.0	--	705.0	--	600.0
1952	0	790.0	1.1	705.0	--	595.0
1953	764.0	1,357.0	1.1	705.0	--	1,312.0
1954	157.0	1,580.0	1.1	705.0	--	57.0
1955	0	766.0	--	705.0	--	600.0
1956	42.0	2,398.0	--	705.0	--	1,105.0
1957	73.0	618.0	9.7	480.0	--	183.0
1958	1,859.0	1,712.0	--	480.0	--	140.0
1959	102.0	2,020.0	--	480.0	--	960.0
1960	123.0	850.0	1.6	480.0	--	80.0
1961	1.0	1055.0	1.6	0	--	198.0
1962	48.0	238.0	1.6	480.0	--	31.0
1963	553.0	1,070.0	1.6	400.0	868.8	150.0
1964	875.0	335.0	1.6	0	868.8	645.0
1965	446.0	0	1.6	400.0	868.8	150.0
1966	933.0	1,093.0	19.7	400.0	868.8	100.0
1967	3,595.0	5.0	19.7	400.0	868.8	0
1968	4,574.0	1,300.0	19.7	400.0	868.8	1,078.0
1969	4,528.0	1,385.0	19.7	400.0	868.8	0
1970	3,784.0	200.0	19.7	963.0	868.8	0
1971	4,354.0	0	19.7	240.0	868.8	0
1972	2,792.0	0	19.7	769.0	868.8	0
1973	4,447.0	1,692.0	19.7	963.0	868.8	0
1974	4,637.0	1,692.0	19.7	963.0	868.8	0
1975	3,915.0	1,692.0	19.7	963.0	868.8	0
1976	3,957.0	1,982.0	19.7	963.0	868.8	0
1977	4,002.0	1,982.0	19.7	1,280.0	868.8	0
1978	181.0	2,100.0	18.1	1,280.0	868.8	0
1979	181.0	5,882.2	19.7	1,280.0	868.8	0
1980	173.5	0	19.7	0	868.8	0
1981	0	325.0	19.7	240.0	868.8	0
1982	4.6	0	19.7	0	868.8	0
1983	25.0	325.0	19.7	0	868.8	0
1984	56.0	325.0	19.7	0	868.8	0
1985	343.4	0	19.7	0	868.8	0
1986	355.4	2,405.7	19.7	0	868.8	0
1987	370.8	2,413.1	19.7	0	868.8	0
1988	362.4	0	19.7	0	868.8	0
1989	0	969.5	19.7	0	868.8	0
1990	370.4	0	19.7	0	868.8	0
1991	2,876.8	700.1	18.1	0	868.8	0
1992	0	0	18.1	0	868.8	0

PWS-0197-0094

Table 19. Water-use information for self-supplied water users in Antelope Valley by water-supply sources, 1946-92--Continued

Year	Milford, Terry	Miller, Kieth	Mitchel and Gunning	Monseello, Andrew	Morgan, Carlos M., Estate of	Morris, Wayne F. and Annette L.	Mountain Glen Ranch	Mountain High-Holiday Hill Company
	Purchased	Purchased	Purchased	Ground water	Ground water	Surface water	Ground water	Ground water
1946	--	--	--	0	0	1.6	0	0
1947	--	--	--	0	0	1.6	0	0
1948	--	--	--	0	0	1.6	0	0
1949	--	--	--	0	100.0	1.6	0	0
1950	--	--	--	0	0	1.6	0	0
1951	--	--	--	0	19.0	1.6	0	0
1952	--	--	--	290.0	44.0	1.6	0	0
1953	--	--	--	290.0	1,825.0	1.6	0	0
1954	--	--	--	290.0	311.0	1.6	0	0
1955	--	--	--	280.0	41.0	1.6	0	0
1956	--	--	--	280.0	12.0	1.6	30.0	0
1957	--	--	--	70.0	4.0	1.6	0	0
1958	--	--	--	164.0	75.0	1.6	0	0
1959	--	--	--	0	650.0	1.6	29.0	0
1960	--	--	--	0	14.0	1.6	223.0	0
1961	--	--	--	0	176.0	1.6	448.0	0
1962	--	--	--	0	50.0	1.6	376.0	0
1963	--	--	--	0	27.0	1.6	185.0	0
1964	--	--	--	0	286.0	1.6	208.0	0
1965	--	--	--	0	55.0	1.6	0	0
1966	--	--	--	0	46.0	1.6	3,453.0	0
1967	--	--	--	0	66.0	1.6	1,000.0	0
1968	--	--	--	190.0	70.0	1.6	65.0	0
1969	--	--	--	290.0	388.0	1.6	1,154.0	0
1970	--	--	--	0	0	1.6	50.0	0
1971	--	--	--	190.0	150.0	1.6	50.0	0
1972	--	--	--	0	0	1.6	472.0	13.0
1973	--	--	--	198.0	165.0	1.6	50.0	569.0
1974	--	--	--	190.0	165.0	1.6	0	560.0
1975	--	--	--	160.0	165.0	1.6	0	560.0
1976	0	0	0	100.0	165.0	1.6	0	560.0
1977	0	0	0	100.0	18.0	1.6	64.0	51.0
1978	0	0	1,304.0	0	18.0	1.6	0	55.0
1979	0	3.0	1,698.0	0	0	1.6	0	0
1980	0	2.0	1,933.0	0	165.0	1.6	0	41.0
1981	0	3.0	1,481.0	0	165.0	1.6	0	25.0
1982	3.0	4.0	1,316.0	0	25.0	1.6	0	180.0
1983	6.0	9.0	1,281.0	0	25.0	1.6	0	0
1984	6.0	11.0	0	0	27.0	1.6	0	27.0
1985	7.0	11.0	0	0	25.0	1.6	0	24.0
1986	7.0	10.0	0	0	12.0	1.6	0	49.0
1987	6.0	14.0	0	0	20.0	1.6	0	9.0
1988	6.0	13.0	0	0	12.0	1.6	0	0
1989	6.0	14.0	0	0	9.9	1.6	0	180.0
1990	7.0	14.0	0	0	0	1.6	0	30.0
1991	6.0	10.0	0	0	0	1.6	0	14.0
1992	6.0	11.0	46.0	0	0	1.6	0	0

Table 19. Water-use information for self-supplied water users in Antelope Valley by water-supply sources, 1946-92--Continued

Year	Nakasone Development Company	Nebeker, E.A., and others, Estate of	Nishimoto, Jimmie M.	Nishimoto, Roy	Ordway, Ben F.	Pablo, Mr. and Mrs. Pastor	Peachland Farms
	Ground water	Ground water	Ground water	Ground water	Surface water	Ground water	Purchased
1946	0	0	0	0	29.0	0	--
1947	1,344.0	2,906.0	410.0	0	29.0	0	--
1948	1,120.0	1,805.0	54.0	0	29.0	748.0	--
1949	1,120.0	1,374.0	9.0	0	29.0	748.0	--
1950	1,120.0	3,042.0	410.0	0	29.0	748.0	--
1951	600.0	3,775.0	629.0	0	29.0	805.0	--
1952	1,649.0	2,984.0	370.0	0	29.0	748.0	--
1953	600.0	1,079.0	1,006.0	0	29.0	625.0	--
1954	1,350.0	2,540.0	1,214.0	0	29.0	697.0	--
1955	1,800.0	3,905.0	377.0	0	29.0	695.0	--
1956	1,800.0	3,520.0	190.0	528.0	29.0	2,135.0	--
1957	990.0	3,870.0	318.0	0	29.0	2,135.0	--
1958	2,433.0	1,851.0	129.0	0	29.0	2,130.0	--
1959	1,363.0	1,768.0	13.0	0	29.0	2,587.0	--
1960	1,800.0	3,433.0	260.0	0	29.0	2,040.0	--
1961	2,000.0	4,145.0	250.0	36.0	29.0	1,560.0	--
1962	2,471.0	2,224.0	920.0	0	29.0	1,620.0	--
1963	2,492.0	2,544.0	71.0	0	29.0	2,961.0	--
1964	1,691.0	3,112.0	24.0	7.0	29.0	2,244.0	--
1965	2,000.0	3,225.0	330.0	0	29.0	0	--
1966	3,600.0	4,010.0	684.0	520.0	29.0	1,072.0	--
1967	2,601.0	2,665.0	20.0	479.0	29.0	50.0	--
1968	3,885.0	4,431.0	286.0	900.0	29.0	657.0	--
1969	2,663.0	4,464.0	284.0	930.0	29.0	862.0	--
1970	3,850.0	4,089.0	330.0	960.0	29.0	0	--
1971	3,850.0	2,705.0	330.0	6.0	29.0	0	--
1972	175.0	129.0	0	0	29.0	0	--
1973	3,850.0	2,514.0	315.0	6.0	29.0	0	--
1974	3,850.0	2,161.0	315.0	6.0	29.0	0	--
1975	3,850.0	2,307.0	315.0	6.0	29.0	0	--
1976	3,850.0	2,498.0	315.0	960.0	29.0	0	0
1977	3,850.0	2,364.0	315.0	6.0	29.0	0	0
1978	3,850.0	2,364.0	315.0	6.0	29.0	0	0
1979	3,850.0	2,364.0	500.0	0	29.0	0	0
1980	1,800.0	1,973.0	342.0	0	29.0	0	0
1981	1,350.0	2,216.0	340.0	0	29.0	0	0
1982	0	2,216.0	340.0	0	29.0	0	0
1983	0	2,216.0	320.0	0	29.0	0	0
1984	0	2,083.0	0	0	29.0	0	0
1985	0	2,218.0	0	0	29.0	0	0
1986	0	2,218.0	0	0	29.0	0	0
1987	0	2,218.0	0	0	29.0	0	0
1988	0	0	0	0	29.0	0	66.0
1989	0	219.0	0	0	--	0	179.0
1990	0	91.0	0	0	--	0	274.0
1991	0	190.0	0	0	--	0	280.0
1992	0	0	0	0	--	0	288.0

PWS-0197-0096

Table 19. Water-use information for self-supplied water users in Antelope Valley by water-supply sources, 1946-92--Continued

Year	Piani, Gino	Poncedelon, Modesto	Portanova	Pratt, Doctor W.H.	Proctor, Carl	Pulsipher Enterprises	Punchbowl Canyon Water Association	R and M Ranch Incorporated
	Ground water	Purchased	Purchased	Ground water	Ground water	Purchased	Surface water	Ground water
1946	0	--	--	0	0	--	--	0
1947	0	--	--	0	640.0	--	--	0
1948	525.0	--	--	960.0	640.0	--	--	347.0
1949	525.0	--	--	865.0	600.0	--	--	27.0
1950	525.0	--	--	0	600.0	--	--	0
1951	1,320.0	--	--	750.0	575.0	--	--	79.0
1952	525.0	--	--	314.0	560.0	--	--	480.0
1953	780.0	--	--	532.0	560.0	--	--	1,347.0
1954	780.0	--	--	169.0	540.0	--	--	411.0
1955	600.0	--	--	150.0	500.0	--	--	1,380.0
1956	780.0	--	--	357.0	480.0	--	--	1,099.0
1957	11.0	--	--	826.0	460.0	--	--	3,144.0
1958	500.0	--	--	343.0	436.0	--	--	1,078.0
1959	670.0	--	--	36.0	670.0	--	--	2,170.0
1960	0	--	--	343.0	0	--	--	2,170.0
1961	1,200.0	--	--	343.0	0	--	--	1,088.0
1962	1,200.0	--	--	43.0	484.0	--	--	2,170.0
1963	0	--	--	400.0	0	--	--	1,035.0
1964	1,250.0	--	--	746.0	508.0	--	--	2,980.0
1965	1,250.0	--	--	343.0	0	--	--	3,670.0
1966	1,250.0	--	--	250.0	0	--	--	3,670.0
1967	400.0	--	--	630.0	0	--	--	3,670.0
1968	1,300.0	--	--	0	0	--	--	3,670.0
1969	800.0	--	--	20.0	2,150.0	--	--	3,500.0
1970	1,300.0	--	--	0	2,150.0	--	--	2,400.0
1971	0	--	--	0	500.0	--	27.5	2,000.0
1972	25.0	--	--	343.0	800.0	--	27.5	4,053.0
1973	0	--	--	330.0	0	--	27.5	3,800.0
1974	0	--	--	330.0	0	--	27.5	3,800.0
1975	0	--	--	400.0	0	--	27.5	2,710.0
1976	0	0	0	480.0	0	0	27.5	3,200.0
1977	0	0	0	0	0	0	27.5	3,450.0
1978	0	0	0	480.0	0	0	27.5	3,500.0
1979	0	0	0	480.0	0	0	27.5	2,500.0
1980	0	1.0	0	480.0	2,150.0	0	27.5	2,450.0
1981	0	6.0	0	9.4	0	--	27.5	3,500.0
1982	0	6.0	0	420.0	0	0	27.5	3,750.0
1983	0	6.0	0	420.0	0	0	27.5	2,300.0
1984	0	6.0	0	0	0	0	27.5	2,676.0
1985	0	6.0	0	480.0	0	5.0	27.5	2,683.0
1986	0	6.0	0	880.0	0	8.0	27.5	2,979.0
1987	0	6.0	0	0	300.0	8.0	27.5	2,989.0
1988	0	6.0	4.0	0	0	10.0	27.5	2,980.0
1989	0	6.0	0	0	80.0	8.0	27.5	2,670.0
1990	0	6.0	0	0	80.0	8.0	27.5	2,785.0
1991	0	6.0	0	0	380.0	7.0	--	2,780.0
1992	0	6.0	0	0	0	8.0	--	0

PWS-0197-0097

Table 19. Water-use information for self-supplied water users in Antelope Valley by water-supply sources, 1946-92--Continued

Year	Rancho Corona Del Valle Corporation	Rabinov, David, Medical Doctor	Rancho Vista Development	Reca, Dominique	Retlaw Enterprises Incorporated	Ritter and Godde			Robbins, David
	Ground water	Surface water	Purchased	Ground water	Ground water	Ground water	Pur- chased	Total	Purchased
1946	0	--	--	0	0	0	--	0	--
1947	0	--	--	0	0	1,767.0	--	1,767.0	--
1948	560.0	--	--	0	0	2,027.0	--	2,027.0	--
1949	1,344.0	--	--	0	0	1,382.0	--	1,382.0	--
1950	0	--	--	0	0	1,833.0	--	1,833.0	--
1951	798.0	--	--	0	0	1,140.0	--	1,140.0	--
1952	548.0	--	--	480.0	0	4,927.0	--	4,927.0	--
1953	0	--	--	600.0	0	2,531.0	--	2,531.0	--
1954	748.0	--	--	600.0	0	2,447.0	--	2,447.0	--
1955	0	--	--	600.0	0	2,327.0	--	2,327.0	--
1956	2,141.0	--	--	600.0	0	2,349.0	--	2,349.0	--
1957	3,118.0	--	--	1,020.0	0	4,345.0	--	4,345.0	--
1958	2,726.0	--	--	600.0	0	3,569.0	--	3,569.0	--
1959	2,053.0	--	--	600.0	0	3,676.0	--	3,676.0	--
1960	2,528.0	--	--	600.0	0	4,399.0	--	4,399.0	--
1961	2,854.0	4.0	--	600.0	0	6,477.0	--	6,477.0	--
1962	5,278.0	4.0	--	600.0	0	5,391.0	--	5,391.0	--
1963	4,848.0	4.0	--	600.0	0	4,358.0	--	4,358.0	--
1964	3,792.0	4.0	--	600.0	0	6,130.0	--	6,130.0	--
1965	0	4.0	--	600.0	0	7,136.0	--	7,136.0	--
1966	1,676.0	4.0	--	800.0	0	6,582.0	--	6,582.0	--
1967	5,278.0	1.6	--	800.0	0	6,167.0	--	6,167.0	--
1968	5,808.0	1.6	--	850.0	0	11,234.0	--	11,234.0	--
1969	4,523.0	1.6	--	850.0	0	11,582.0	--	11,582.0	--
1970	6,025.0	1.6	--	850.0	0	12,124.0	--	12,124.0	--
1971	0	1.6	--	850.0	0	10,708.0	--	10,708.0	--
1972	159.0	3.4	--	0	0	9,247.0	--	9,247.0	--
1973	0	3.4	--	850.0	0	10,069.0	--	10,069.0	--
1974	0	3.4	--	850.0	0	8,952.0	--	8,952.0	--
1975	0	--	--	850.0	0	1,259.0	--	1,259.0	--
1976	0	--	0	850.0	0	11,067.0	0	11,067.0	0
1977	0	--	0	850.0	0	8,626.0	914.0	9,540.0	0
1978	0	--	0	850.0	0	13,094.0	2,086.0	15,180.0	0
1979	0	--	0	850.0	0	2,460.6	4,918.0	7,378.6	0
1980	0	3.4	0	600.0	0	2,902.1	1,876.0	4,778.1	0
1981	0	3.4	0	600.0	0	4,778.0	5,868.0	10,646.0	0
1982	0	3.4	0	600.0	3,728.6	2,610.0	4,616.0	7,226.0	0
1983	0	4.0	0	600.0	0	2,038.7	2,881.0	4,919.7	0
1984	0	4.0	0	600.0	6,602.0	0	3,357.0	3,357.0	0
1985	0	4.0	0	0	7,285.5	2,333.2	4,291.0	6,624.2	0
1986	0	4.0	0	0	6,576.0	0	2,894.0	2,894.0	0
1987	0	4.0	155.0	0	7,306.0	3,765.2	3,645.0	7,410.2	0
1988	0	--	225.0	0	0	0	2,939.0	2,939.0	0
1989	0	4.0	11.0	0	6,914.0	3,887.5	2,911.0	6,798.5	0
1990	0	4.0	0	0	6,904.0	3,161.6	3,843.0	7,004.6	0
1991	0	4.0	0	0	6,914.0	6,082.8	0	6,082.8	4.0
1992	0	--	0	0	0	0	1,124.0	1,124.0	8.0

PWS-0197-0098

Table 19. Water-use information for self-supplied water users in Antelope Valley by water-supply sources, 1946-92--*Continued*

Year	Robinson, F. Willard, and others	Rosen, Santee	RR Ranch	S & D	Sasland Farms/ Spivak-Brown	Schnaidt, Harold	Searcy, Travis	Seiki Investment Corporation
	Surface water	Purchased	Purchased	Purchased	Ground water	Purchased	Purchased	Ground water
1946	18.8	--	--	--	0	--	--	0
1947	18.8	--	--	--	220.0	--	--	0
1948	18.8	--	--	--	220.0	--	--	150.0
1949	18.8	--	--	--	375.0	--	--	750.0
1950	18.8	--	--	--	375.0	--	--	1,500.0
1951	18.8	--	--	--	375.0	--	--	1,500.0
1952	18.8	--	--	--	324.0	--	--	611.0
1953	18.8	--	--	--	375.0	--	--	624.0
1954	18.8	--	--	--	375.0	--	--	135.0
1955	18.8	--	--	--	375.0	--	--	240.0
1956	18.8	--	--	--	375.0	--	--	240.0
1957	18.8	--	--	--	359.0	--	--	589.0
1958	18.8	--	--	--	630.0	--	--	2,163.0
1959	18.8	--	--	--	315.0	--	--	30.0
1960	18.8	--	--	--	420.0	--	--	240.0
1961	18.8	--	--	--	350.0	--	--	765.0
1962	18.8	--	--	--	259.0	--	--	240.0
1963	18.8	--	--	--	450.0	--	--	2,312.0
1964	18.8	--	--	--	375.0	--	--	64.0
1965	18.8	--	--	--	320.0	--	--	68.0
1966	18.8	--	--	--	360.0	--	--	0
1967	18.8	--	--	--	400.0	--	--	68.0
1968	18.8	--	--	--	600.0	--	--	68.0
1969	18.8	--	--	--	600.0	--	--	2,335.0
1970	18.8	--	--	--	900.0	--	--	0
1971	18.8	--	--	--	900.0	--	--	0
1972	18.8	--	--	--	775.0	--	--	0
1973	18.8	--	--	--	1,200.0	--	--	0
1974	18.8	--	--	--	1,200.0	--	--	0
1975	--	--	--	--	1,200.0	--	--	0
1976	--	0	0	2,575.0	1,200.0	1,655.0	0	0
1977	--	0	169.0	1,514.0	0	3,519.0	0	0
1978	--	0	839.0	1,906.0	0	1,913.0	0	0
1979	--	0	1,085.0	2,561.0	0	2,513.0	0	0
1980	--	0	1,085.0	2,148.0	0	2,759.0	0	0
1981	--	0	1,390.0	2,316.0	0	1,559.0	0	0
1982	--	0	1,192.0	2,272.0	0	47.0	0	0
1983	--	2.0	1,083.0	0	0	11.0	0	0
1984	--	3.0	1,233.0	0	0	28.0	0	0
1985	--	3.0	1,573.0	0	300.0	31.0	3.0	0
1986	--	3.0	1,638.0	0	0	59.0	7.0	0
1987	--	3.0	889.0	0	0	107.0	6.0	0
1988	4.4	3.0	872.0	0	0	89.0	6.0	0
1989	4.4	3.0	1,156.0	0	0	117.0	7.0	0
1990	4.4	3.0	1,188.0	0	0	119.0	6.0	0
1991	--	6.0	0	0	0	80.0	6.0	0
1992	--	6.0	479.0	0	0	65.0	6.0	0

PWS-0197-0099

Table 19. Water-use information for self-supplied water users in Antelope Valley by water-supply sources, 1946-92--Continued

Year	Silva, Don Purchased	Simi, Roy Purchased	Southern California Edison Company Ground water	Stevens, William E. Ground water	Stoner Purchased	Sundown Ranch Company Ground water	Tapia Brothers Purchased	Tauton, Windsor P. Ground water
1946	--	--	0	0	--	0	--	0
1947	--	--	0	0	--	0	--	0
1948	--	--	0	0	--	4.0	--	0
1949	--	--	0	569.0	--	0	--	0
1950	--	--	0	0	--	0	--	0
1951	--	--	0	0	--	226.0	--	0
1952	--	--	0	0	--	0	--	0
1953	--	--	0	244.0	--	0	--	0
1954	--	--	0	235.0	--	0	--	0
1955	--	--	0	240.0	--	0	--	0
1956	--	--	5.0	1,176.0	--	20.0	--	0
1957	--	--	9.0	454.0	--	0	--	0
1958	--	--	540.0	516.0	--	149.0	--	0
1959	--	--	0	502.0	--	408.0	--	0
1960	--	--	9.0	473.0	--	399.0	--	0
1961	--	--	8.0	540.0	--	943.0	--	0
1962	--	--	660.0	557.0	--	132.0	--	0
1963	--	--	856.0	511.0	--	77.0	--	0
1964	--	--	7.0	543.0	--	78.0	--	0
1965	--	--	6.0	520.0	--	501.0	--	0
1966	--	--	89.0	505.0	--	956.0	--	0
1967	--	--	13.0	515.0	--	911.0	--	0
1968	--	--	7.0	510.0	--	0	--	0
1969	--	--	575.0	370.0	--	128.0	--	0
1970	--	--	13.0	480.0	--	364.0	--	0
1971	--	--	17.0	528.0	--	0	--	0
1972	--	--	30.0	0	--	0	--	0
1973	--	--	15.0	0	--	0	--	0
1974	--	--	9.0	0	--	0	--	0
1975	--	--	11.0	648.0	--	0	--	0
1976	0	0	10.0	823.0	0	0	0	0
1977	0	0	11.0	989.0	0	0	0	0
1978	0	0	11.0	936.0	136.0	0	1,010.0	0
1979	0	59.0	0	950.0	1,824.0	0	701.0	0
1980	0	650.0	9.2	0	2,150.0	0	2,041.0	.3
1981	0	1,154.0	9.5	0	1,961.0	0	2,423.0	.3
1982	0	989.0	9.0	0	1,591.0	0	2,521.0	.3
1983	0	787.0	7.9	0	2,438.0	0	1,967.0	.3
1984	0	1,372.0	16.5	0	0	0	1,487.0	1.8
1985	0	1,093.0	2.7	0	0	0	2,183.0	1.8
1986	0	955.0	8.2	0	0	0	1,405.0	1.8
1987	0	1,188.0	8.2	0	0	0	1,573.0	1.8
1988	2.0	994.0	0	0	0	0	599.0	1.8
1989	11.0	1,150.0	0	0	0	0	1,707.0	0
1990	12.0	925.0	.1	0	0	.1	1,294.0	0
1991	9.0	0	20.0	0	0	0	0	0
1992	10	0	0	0	0	0	402.0	0

PWS-0197-0100

Table 19. Water-use information for self-supplied water users in Antelope Valley by water-supply sources, 1946-92--Continued

Year	Tejon Ranch			Thompson, Jerome H.	Trans Homes	Traweek, S.V.	United States Angeles National Forest			Union Wilshire Incorporated	Vandereyk
	Ground water	Pur-chased	Total	Surface water	Ground water	Ground water	Ground water	Surface water	Total	Ground water	Purchased
1946	--	--	0	--	0	0	0	--	0	0	--
1947	--	--	0	--	0	0	0	--	0	0	--
1948	--	--	0	--	4,871.0	0	0	--	0	0	--
1949	--	--	0	--	0	765.0	0	--	0	105.0	--
1950	--	--	0	--	0	0	0	--	0	0	--
1951	--	--	0	--	0	480.0	0	--	0	948.0	--
1952	--	--	0	--	13.0	375.0	0	4.5	4.5	275.0	--
1953	--	--	0	--	590.0	420.0	0	4.5	4.5	1,200.0	--
1954	--	--	0	--	580.0	1,319.0	0	4.5	4.5	1,724.0	--
1955	--	--	0	--	560.0	560.0	0	4.5	4.5	979.0	--
1956	--	--	0	--	540.0	126.0	0	4.5	4.5	686.0	--
1957	--	--	0	--	436.0	565.0	0	4.5	4.5	444.0	--
1958	--	--	0	--	0	449.0	0	4.5	4.5	762.0	--
1959	--	--	0	--	0	390.0	0	4.5	4.5	1,276.0	--
1960	--	--	0	--	0	390.0	0	4.5	4.5	846.0	--
1961	--	--	0	3.1	478.0	53.0	0	4.5	4.5	632.0	--
1962	--	--	0	3.1	0	13.0	0	4.5	4.5	813.0	--
1963	--	--	0	3.1	0	1,074.0	0	4.5	4.5	820.0	--
1964	--	--	0	3.1	0	525.0	0	4.5	4.5	693.0	--
1965	--	--	0	3.1	0	525.0	0	4.5	4.5	1,273.0	--
1966	--	--	0	3.1	0	125.0	0	4.5	4.5	1,183.0	--
1967	--	--	0	3.1	0	58.0	0	4.5	4.5	1,139.0	--
1968	--	--	0	3.1	0	1,397.0	0	4.5	4.5	1,594.0	--
1969	--	--	0	3.1	0	650.0	0	4.5	4.5	569.0	--
1970	--	--	0	3.1	0	520.0	0	4.5	4.5	1,602.0	--
1971	--	--	0	3.1	0	515.0	0	4.5	4.5	1,505.0	--
1972	--	--	0	3.1	0	0	24.3	4.5	28.8	973.0	--
1973	--	--	0	3.1	0	500.0	21.2	4.5	25.7	1,791.0	--
1974	--	--	0	3.1	0	500.0	17.5	4.5	22.0	1,620.0	--
1975	--	--	0	3.1	0	500.0	21.0	4.5	25.5	1,229.0	--
1976	--	11,677.0	11,677.0	3.1	0	500.0	20.9	4.5	25.4	1,774.0	457.0
1977	--	9,268.0	9,268.0	3.1	0	500.0	32.2	4.5	36.7	0	953.0
1978	--	5,690.0	5,690.0	3.1	0	500.0	28.9	4.5	33.4	0	893.0
1979	--	5,970.0	5,970.0	3.1	0	450.0	37.9	0.8	38.7	0	1,100.0
1980	--	8,860.0	8,860.0	3.1	0	450.0	25.7	0.8	26.5	0	1,093.0
1981	--	8,158.0	8,158.0	3.1	0	450.0	42.1	0.8	42.9	0	0
1982	--	3,714.0	3,714.0	3.1	0	450.0	24.0	4.5	28.5	0	0
1983	--	55.0	55.0	3.1	0	450.0	43.1	4.5	47.6	0	0
1984	--	93.0	93.0	3.1	0	450.0	0	4.5	4.5	0	0
1985	--	8.0	8.0	3.1	0	0	105.0	3.6	108.6	0	0
1986	--	6.0	6.0	3.1	0	0	0	3.6	3.6	0	0
1987	--	0	0	3.1	0	0	44.0	3.6	47.6	0	0
1988	--	0	0	3.1	0	0	41.0	20.6	61.6	0	0
1989	--	0	0	3.1	0	0	95.0	20.6	115.6	0	0
1990	--	0	0	3.1	0	0	0	20.6	20.6	0	0
1991	9,728.0	-3,265.0	6,463.0	--	0	0	127.3	--	127.3	0	0
1992	1,006.0	0	1,006.0	--	0	0	0	--	0	0	0

PWS-0197-0101

Table 19. Water-use information for self-supplied water users in Antelope Valley by water-supply sources, 1946-92--Continued

Year	Vaught, Amelia Purchased	Wade, Thomas H. Ground water	Ward, J.W./ Lyman Champlain Ground water	Weaver Purchased	White, J.F. JR., H.B. and D.B. Surface water	White, James B. or Dee Ann Ground water	White, Michael G. Ground water	White, Richard A. Ground water
1946	--	0	0	--	0.8	0	0	0
1947	--	0	280.0	--	.8	0	0	0
1948	--	0	280.0	--	.8	0	0	0
1949	--	0	30.0	--	.8	0	0	0
1950	--	0	280.0	--	.8	0	0	0
1951	--	0	322.0	--	.8	0	0	0
1952	--	0	370.0	--	.8	0	0	0
1953	--	0	280.0	--	.8	0	0	0
1954	--	0	49.0	--	.8	0	0	0
1955	--	0	280.0	--	.8	0	0	0
1956	--	0	280.0	--	.8	0	0	0
1957	--	0	132.0	--	.8	0	0	0
1958	--	0	0	--	.8	0	0	0
1959	--	0	1.0	--	.8	0	0	0
1960	--	0	2.0	--	.8	0	0	0
1961	--	0	138.0	--	1.0	0	0	0
1962	--	0	2.0	--	1.0	0	0	0
1963	--	0	1.0	--	1.0	0	0	0
1964	--	0	0	--	.8	0	0	0
1965	--	0	1.0	--	.8	0	0	0
1966	--	0	502.0	--	.8	0	0	0
1967	--	0	1.0	--	1.1	0	0	0
1968	--	0	1.0	--	1.1	0	0	0
1969	--	0	1.0	--	1.1	0	0	0
1970	--	0	1.0	--	53.8	0	0	0
1971	--	0	1.0	--	53.8	0	0	0
1972	--	0	246.0	--	53.8	0	0	0
1973	--	0	1.0	--	53.8	0	0	0
1974	--	0	1.0	--	53.8	0	0	0
1975	--	0	0	--	53.8	0	0	0
1976	0	0	0	0	.8	0	0	0
1977	0	0	0	1.0	.8	0	0	0
1978	0	0	0	45.0	.8	0	0	0
1979	0	0	0	859.0	2.1	0	0	0
1980	0	0	0	354.0	2.1	0	0	0
1981	0	0	0	835.0	2.1	0	0	0
1982	0	0	0	1.0	.8	0	0	0
1983	0	0	0	1.0	.8	0	0	0
1984	0	0	0	0	.8	0	0	0
1985	0	0	0	0	.8	0	0	1.2
1986	5.0	0	0	0	.8	.2	0	1.2
1987	6.0	0	0	0	.8	.2	.1	1.3
1988	7.0	0	0	0	.8	.2	.1	1.4
1989	7.0	1.8	0	0	.8	24.0	0	0
1990	6.0	0	0	0	.8	14.0	0	2.2
1991	6.0	3.3	0	0	.8	43.0	0	1.1
1992	6.0	0	0	0	.8	0	0	0

PWS-0197-0102

Table 19. Water-use information for self-supplied water users in Antelope Valley by water-supply sources, 1946-92--Continued

Year	Williams, Claude	Zamrzla, Johnny	Total self- supplied water	Total self- supplied water	Total	Grand total	No. of users reporting (of 156)
	Ground water	Ground water	Ground water	Surface water	Purchased		
1946	0	0	230.0	104.6	0	334.6	8
1947	569.0	240.0	75,883.0	104.6	0	75,987.6	33
1948	2,240.0	147.0	132,018.0	466.9	0	132,484.9	50
1949	569.0	90.0	135,170.0	3,874.1	0	139,044.1	55
1950	569.0	240.0	113,682.0	3,874.0	0	117,556.0	45
1951	896.0	240.0	160,243.0	3,874.0	0	164,117.0	60
1952	86.0	240.0	207,656.0	1,991.4	0	209,647.4	64
1953	355.0	116.0	186,790.0	1,714.6	0	188,504.6	71
1954	1,089.0	101.0	207,773.0	2,514.6	0	210,287.6	71
1955	569.0	240.0	216,317.0	2,513.5	0	218,830.5	68
1956	569.0	308.0	251,767.0	2,913.5	0	254,680.5	78
1957	1,371.0	172.0	208,783.0	3,502.3	0	212,285.3	80
1958	665.0	205.0	196,215.0	3,492.6	0	199,707.6	77
1959	2,000.0	132.0	213,603.0	3,592.6	0	21,195.6	74
1960	569.0	360.0	178,047.0	3,444.3	0	181,491.3	77
1961	77.0	650.0	193,604.0	3,701.6	0	197,305.6	79
1962	1,611.0	125.0	209,507.0	3,504.9	0	213,011.9	79
1963	784.0	96.0	175,401.0	4,972.4	0	180,373.4	80
1964	1,279.0	112.0	174,711.0	5,652.2	0	180,363.2	84
1965	0	240.0	118,236.0	5,664.0	0	123,900.0	75
1966	829.0	0	171,707.0	4,052.4	0	175,759.4	80
1967	829.0	675.0	169,733.0	5,564.5	0	175,297.5	82
1968	93.0	280.0	188,713.0	6,961.0	0	195,674.0	83
1969	2,196.0	280.0	147,575.0	6,962.2	0	154,537.2	85
1970	829.0	280.0	96,647.0	7,014.8	0	103,661.8	81
1971	829.0	0	80,973.0	7,314.4	0	88,287.4	75
1972	0	0	51,874.3	7,318.0	0	59,192.3	58
1973	829.0	0	66,762.2	7,458.2	0	74,220.4	72
1974	829.0	280.0	62,406.5	7,499.2	0	69,905.7	72
1975	0	280.0	56,332.0	7,002.2	0	63,334.2	69
1976	0	280.0	70,101.9	6,581.6	27,295.0	103,978.5	72
1977	0	0	65,481.0	6,581.6	32,646.0	104,708.6	84
1978	0	0	57,428.7	6,603.2	37,615.0	101,646.9	84
1979	0	0	45,098.0	2,064.6	51,166.0	98,328.6	77
1980	0	0	36,922.7	4,217.7	55,428.0	96,568.4	85
1981	0	0	35,721.7	4,616.1	64,570.0	104,907.8	87
1982	0	0	35,772.7	4,891.7	39,627.0	80,291.4	81
1983	0	0	28,588.0	3,506.3	23,922.0	56,016.3	78
1984	0	0	32,163.4	3,833.0	18,699.0	54,695.4	74
1985	0	0	36,504.5	3,956.7	22,136.0	62,597.2	77
1986	0	0	34,079.0	3,337.7	15,040.0	52,456.7	76
1987	0	0	38,305.7	2,744.4	14,693.0	55,743.1	78
1988	0	0	9,083.3	3,165.7	15,274.0	27,523.0	67
1989	0	0	27,920.0	3,127.1	17,108.0	48,155.1	72
1990	0	0	27,306.4	2,119.5	15,499.0	44,924.9	70
1991	0	0	46,535.3	1,633.3	2,769.0	50,937.6	64
1992	0	0	1,006.0	889.3	3,823.0	5,718.3	32

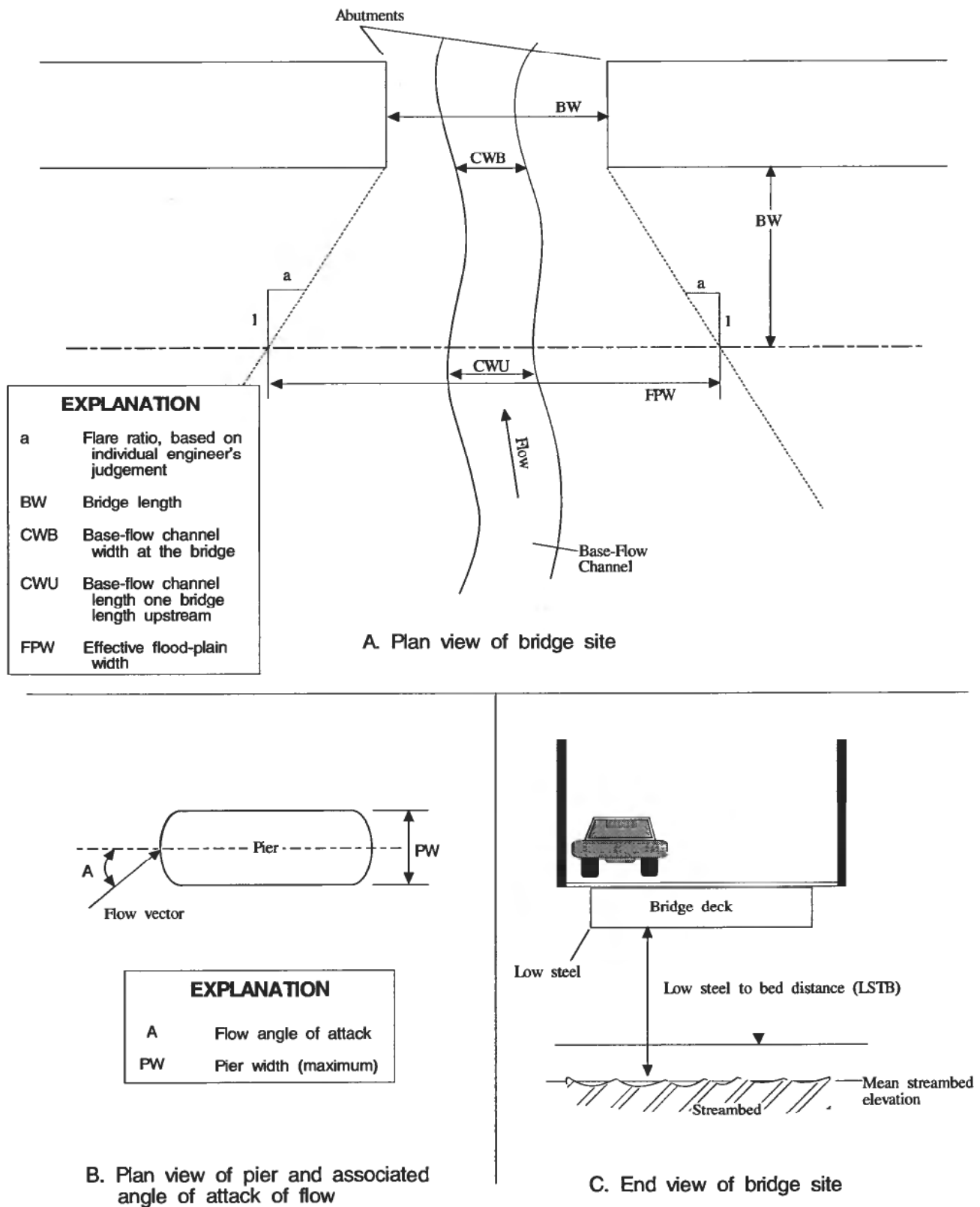


Figure 8. Plan view and detail of bridge site and characteristics for a hypothetical bridge site.

PWS-0197-0104