URBAN WATER MANAGEMENT PLAN

2000

SONOMA COUNTY WATER AGENCY

Sonoma County Water Agency
Urban Water Management Plan 2000

List of Tables

Chapter 6

Chapter 7

Chapter 8

Chapter 9

reduction in surface water supply available to the Agency's water transmission system will occur at a rate of approiirately 1,000 acre-feet each five years between now and the year 2020.

GROUNDWATER SUPPLY

In addition to the surface water supply from the Russian River described above, the Agency has three existing groundwater wells in the Santa Rosa Plain with a maximum production capacity of 7.6 million gallons per day (mgd). These wells are located on Sebastopol Road, Occidental Road and Todd Road and have capacities of 3.6 mgd, 2.3 mgd and 1.7 mgd, respectively. **The reliable capacity of the Agency's existing wells (2/3 of the capacity with the largest well out of service) is 2.7 mgd, or 3,025 acre-feet per year (AFY).**

TOTAL WATER SUPPLY

The current and projected water supplies available to the Agency's water transmission system are shown in Table

1. The water supply deemed available in Table 3 - 1 is based upon the multiple dry years 1990 through 1992 (and the four preceding years). The Agency's mechanism for responding to water supply shortages, should such shortages occur, are discussed in Chapter 7, Water Shortage Contingency Planning.

Table 3 – 1[7]
Current and Projected Water Supplies (acre-feet/year)
Multiple Dry Year Hydrologic Modeling Results
Sonoma County Water Agency

Water Supply Sources	2000	2005	2010	2015	2020
Purchased from USBR	Does not apply				
Purchased from DWR					
Purchased from wholesaler Wholesaler 1					
Supplier produced groundwater	3,025	3,025	3,025	3,025	3,025
Supplier produced surface water	127,830	126,830	125,830	124,830	123,830
Transfers	Does not apply				
Exchanges					
Recycled Water					
Other					
Total	130,855	129,855	128,855	127,855	126,855

[7] Tables 3 - 1 through 3 - 9 are adapted from Example Table 3 in "2000 Urban Water Management Planning Act Checklist and Worksheets," published by the California Department of Water Resources.

CITY OF PETALUMA -

Table 3 - 4 shows the current and projected water supplies available to the City of Petaluma (Petaluma). Petaluma's entitlement to Agency transmission system water under the Eleventh Amended Agreement is a maximum average monthly delivery rate of 21.8 mgd with an annual limit of 13,400 AF. Petaluma currently has 11 operational groundwater wells with a rated production capacity of 5.4 mgd. The long-term reliable capacity of Petaluma's wells (2/3 of the capacity with the largest well out of service) is approximately 3.2 mgd or 3,585 AFY.

Table 3 – 4
Current and Projected Water Supplies (acre-feet/year)
City of Petaluma

Water Supply Sources	2000	2005	2010	2015	2020
Purchased from USBR	Does not apply				
Purchased from DWR					
Purchased from wholesaler					
Sonoma County Water Agency	10,171[a]	10,916[b]	11,898[b]	12,611[b]	13,358[b]
Supplier produced groundwater	1,029[c]	750[b]	500[b]	250[b]	0[b]
Supplier produced surface water	Does not apply				
Transfers					
Exchanges					
Recycled Water	0[b]	300[b]	400[b]	500[b]	600[b]
Total	**11,200[d]**	**11,966[d]**	**12,798[d]**	**13,361[d]**	**13,958[d]**

a Actual water year 2000 delivery from Agency billing meter records. b Provided by Petaluma.
c Calculated as difference between total and water purchased from Agency. d From water use data provided by Petaluma (Table 4 - 6).

Table 3 - 5 shows the current and projected water supplies available to the City of Rohnert Park (Rohnert Park). Rohnert Park's entitlement to Agency transmission system water under the Eleventh Amended Agreement is a maximum average monthly delivery rate of 15.0 mgd with an annual limit of 7,500 AF. Rohnert Park currently has 39 operational groundwater wells with a rated production capacity of 6.3 mgd. The reliable capacity of Rohnert Park's wells (2/3 of the capacity with the largest well out of service) is 4.0 mgd, or 4,481 AFY.

Table 3 – 5
Current and Projected Water Supplies (acre-feet/year)
City of Rohnert Park

Water Supply Sources	2000	2005	2010	2015	2020
Purchased from USBR	Does not apply				
Purchased from DWR					
Purchased from wholesaler					
Sonoma County Water Agency	2,785[a]	7,234[b]	7,500[c]	7,500[c]	7,500[c]
Supplier produced groundwater	4,020[d]	0[e]	172[d]	634[d]	1,108[d]
Supplier produced surface water	Does not apply				
Transfers					
Exchanges					
Recycled Water	973[f]	973[g]	988[g]	1004[g]	1034[g]
Total	**7,778[h]**	**8,207[h]**	**8,660[h]**	**9,138[h]**	**9,642[h]**

a Actual water year 2000 delivery from Agency billing meter records.
b Calculated as difference between total and recycled water.
c WSTSP annual delivery limit.
d Calculated as the difference between total and the sum of water purchased from Agency and recycled water. e Assumes that Rohnert Park wishes to minimize use of their groundwater sources.
f Provided by Santa Rosa Subregional Wastewater Reclamation System.
9 Provided by City of Rohnert Park.
h From water use data (Table 4 - 8) that is derived from information contained in California Department of Health Services, Sonoma County Water Adequacy Evaluation (Appendix A).

Table 3 – 6
Current and Projected Water Supplies (acre-feet/year)
Valley of the Moon Water District

Water Supply Sources	2000	2005	2010	2015	2020
Purchased from USBR	Does not apply				
Purchased from DWR					
Purchased from wholesaler					
Sonoma County Water Agency	2,784[a]	3,200[b]	3,200[b]	3,200[b]	3,200[b]
Supplier produced groundwater	1,031[c]	784[d]	784[d]	784[d]	784[d]
Supplier produced surface water	Does not apply				
Transfers					
Exchanges					
Recycled Water	Does not apply[e]	0[d]	0[d]	0[d]	0[d]
Other		2[f]	174[f]	346[f]	517[f]
Total	**3,815[g]**	**3,986[g]**	**4,158[g]**	**4,330[g]**	**4,501[g]**

a Actual water year 2000 delivery from Agency billing meter records.
b WSTSP annual delivery limit.
c Calculated as difference between total and water purchased from Agency.
d Provided by Valley of the Moon Water District.
e Infrastructure to deliver recycled water does not currently exist in VOMWDs service area. For future possibilities regarding use of recycled water, refer to Chapter 8 in this UWMP 2000.
f From a variety of sources: Valley of the Moon's groundwater, Agency supply defined to be available in Chapter 3, and additional reuse and conservation. Calculated as difference between total and sum of water purchased from Agency and VOMWD produced groundwater.
9 From water use data provided by VOMWD (Table 4 - 10).

CITY OF SONOMA

Table 3 - 7 shows the current and projected water supplies available to the City of Sonoma (Sonoma). Sonoma's entitlement to Agency transmission system water under the Eleventh Amended Agreement is a maximum average monthly delivery rate of 6.3 mgd with an annual limit of 3,000 AF. Sonoma currently has 3 operational groundwater wells with a rated production capacity of 1.1 mgd. The long-term reliable capacity of Sonoma's wells (2/3 of the capacity with the largest well out of service) is approximately 0.4 mgd or 448 AFY.

Table 3 – 7
Current and Projected Water Supplies (acre-feet/year)
City of Sonoma

Water Supply Sources	2000	2005	2010	2015	2020
Purchased from USBR	Does not apply				
Purchased from DWR					
Purchased from wholesaler					
Sonoma County Water Agency	2,508[a]	2,714[b]	2,991[b]	3,000[c]	3,000[c]
Supplier produced groundwater	0[d]	0[e]	0[e]	269[f]	448[g]
Supplier produced surface water	Does not apply				
Transfers					
Exchanges					
Recycled Water	Does not apply[h]	0[i]	0[i]	0[i]	0[i]
Other	0	0	0	0	96[j]
Total	**2,508[k]**	**2,714[l]**	**2,991[l]**	**3,269[l]**	**3,554[l]**

a Actual water year 2000 delivery from Agency billing meter records.
b Calculated as difference between total and Sonoma produced groundwater.
c WSTSP annual delivery limit.
d Assumed. Average annual groundwater production from 1997-1999 was only 7 acre-feet.
e Sonoma indicates that they will rely on Agency produced water rather than operate their wells. f Calculated as difference between total and water purchased from wholesaler.
9 Sonoma wells assumed to be operating at long-term reliable capacity rate of 0.4 mgd.
h Infrastructure to deliver recycled water does not currently exist in Sonoma's service area. For future possibilities regarding use of recycled water, refer to Chapter 8 in this UWMP 2000.
i Provided by City of Sonoma.
1 From a variety of sources: Agency supply defined to be available in Chapter 3 and additional reuse and conservation. Calculated as the difference between total and sum of water delivered from Agency and supplier produced groundwater. k Calculated as sum of water delivered from Agency and supplier produced groundwater. l From water use data provided by Sonoma (Table 4 - 12).

CITY OF COTATI

Table 3 - 8 shows the current and projected water supplies available to the City of Cotati (Cotati). Cotati's entitlement to Agency transmission system water under the Eleventh Amended Agreement is a maximum average monthly delivery rate of 3.8 mgd with an annual limit of 1,520 AF. Cotati currently has 3 operational groundwater wells with a rated production capacity of 2.66 mgd. However, Well 1, which has a pumping capacity of 750 gallons per minute (gpm), only has an effective capacity of 500 gpm because of limitations in the iron/manganese filtration plant. This reduces the total effective capacity to 2.3 mgd. The reliable long-term reliable capacity of Cotati's wells (2/3 of the capacity with the largest well out of service) is approximately 0.8 mgd or 896 AFY.

Table 3 – 8
Current and Projected Water Supplies (acre-feet/year)
City of Cotati

Water Supply Sources	2000	2005	2010	2015	2020
Purchased from USBR	Does not apply				
Purchased from DWR					
Purchased from wholesaler					
Sonoma County Water Agency	769[a]	806[b]	1,471[b]	1,520[c]	1,520[c]
Supplier produced groundwater	409[d]	448[e]	0[e]	0[e]	0[e]
Supplier produced surface water	Does not apply				
Transfers					
Exchanges					
Recycled Water	0[e]	112[e]	112[e]	112[e]	112[e]
Other				204[f]	496[f]
Total	**1,178[g]**	**1,366[g]**	**1,583[g]**	**1,836[g]**	**2,128[g]**

a Actual water year 2000 delivery from Agency billing meter records.
b Calculated as difference between total and the sum of Cotati produced groundwater and recycled water. c WSTSP annual delivery limit.
d Calculated as difference between total and water purchased from whdesaler.
e Provided by Cotati.
f From a variety of sources: Cotati produced groundwater, Agency supply defined to be available in Chapter 3, and additional reuse and conservation. Calculated as difference between total and the sum of recycled water and water purchased from whdesaler.
9 From water use data provided by Cotati (Table 4 - 14).

FORESTVILLE WATER DISTRICT -

Table 3 - 9 shows the current and projected water supplies available to the Forestville Water District (FWD). FWD's entitlement to Agency transmission system water under the Eleventh Amended Agreement is a maximum average monthly delivery rate of 1.5 mgd with no annual limit.

Table 3 – 9
Current and Projected Water Supplies (acre-feet/year)
Forestville Water District

Water Supply Sources	2000	2005	2010	2015	2020
Purchased from USBR	Does not apply				
Purchased from DWR					
Purchased from wholesaler					
Sonoma County Water Agency	480[a]	439[b]	446[b]	456[b]	464[b]
Supplier produced groundwater	Does not apply				
Supplier produced surface water					
Transfers					
Exchanges					
Recycled Water	Does not apply[c]	50[d]	50[d]	50[d]	50[d]
Total	**480[e]**	**489[e]**	**496[e]**	**506[e]**	**514[e]**

a Actual water year 2000 delivery from Agency billing meter records.
b Calculated as difference between total and recycled water.
c Infrastructure to deliver recycled water does not currently exist in FWDs service area. For future possibilities regarding use of recycled water, refer to Chapter 8 in this UWMP 2000.
d Provided by Forestville Water District and assumes that delivery infrastructure is completed prior to 2005. e From water use data provided by FWD (Table 4 -16).

CHAPTER 4

Water Use

Water Code: 910631. A plan shall be adopted in accordance with this chapter and shall do all of the following:

> 910631 (e) (1) Quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, identifying the uses among water use sectors including, but not necessarily limited to, all of the following uses:
>
> (A) Single-family residential; (B) Multifamily; (C) Commercial; (D) Industrial; (E) Institutional and governmental; (F) Landscape; (G) Sales to other agencies; (H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof; and (I) Agricultural.
>
> (2) The water use projections shall be in the same 5-year increments to 20 years or as far as data is available.

PAST, CURRENT AND PROJECTED WATER USE

The past, current and projected wholesale water distributed by the Agency is shown in Table 4 - 1. The historical water distributed in water year 1980 and 1985 was 32,069 and 40,956 acre-feet, respectively. The annual rate of increase from water years 1990 through 2000 was approximately 1.7 percent.

Table 4 – 1[1]
Wholesaler Water Distribution (acre-feet)
Sonoma County Water Agency

Distribution	1990	1995	2000	2005	2010	2015	2020
Water Contractors	46,366[a]	47,974[a]	51,751[b]	59,692[b]	68,502[b]	70,094[b]	70,824[b]
Other users[2]	5,073[c]	5,670[c]	8,941[c]	10,378[d]	11,458[d]	12,650[d]	13,967[d]
Total	**51,439[e]**	**53,644[e]**	**60,692[e]**	**70,070[f]**	**79,960[f]**	**82,744[f]**	**84,791[f]**

[a] Actual water year delivery from Agency billing records for water contractors.
*'Sum of water contractors projected water supplies to be purchased from Agency (Tables 3 - 2 through 3 - 9). `Calculated as difference between total and distribution to water contractors.
[d] Projections assume an approximate 2 percent annual increase from the water year 2000 base through water year 2020.
[e] Actual water year delivery from Agency billing records for water contractors and other users.

Tables 4 - 2 through 4 - 16, presented on the following pages, contain information for each of the Agency's water contractors regarding past, current and projected water use and connections per water-use sector. In some case, as noted in the table or text, information is unknown or otherwise unavailable.

1 Table 4 -1 is adapted from Example Table 3 in "2000 Urban Water Management Planning Act Checklist and Worksheets," published by the California Department of Water Resources.
2 Other users that the Agency has an obligation to deliver water to include, but are not limited to, Marin Municipal Water District, the Town of Windsor, and the Lawndale Mutual, Penngrove, and Kenwood Water Companies.

Table 4 - 2s' the available water end-use data provided by the City of Santa Rosa (Santa Rosa). The projections ar 3d on the "Santa Rosa Water Supply Analysis - Draft January 2001" by West Yost and Associates. Year 2005 data is based on the low range demand projections; projections for the years 2010 - 2020

are based on the mid-point of the low projections and high projections of this study. Recycled landscape use IS based upon a projection of anticipated recycled water projects. Santa Rosa currently has a city park and several non-residential landscapes on recycled water. A preliminary assessment indicates that irrigation with recycled water of additional urban landscapes maybe feasible. Santa Rosa will be evaluating their service area for the most cost effective reuse projects in 2001. The projections below assume these additional uses.

Table 4 – 2[3]
Past, Current and Projected Water End-Use
City of Santa Rosa
(acre-feet/year)

Water Use Sectors	1990	1995	2000	2005	2010	2015	2020
Single family residential	12,109	11,254	12,098	18,205	20,490	21,865	23,004
Multi-family residential	3,069	3,597	3,468				
Commercial	Included in Institutional and Governmental						
Industrial							
Institutional and Governmental	5,923	3,526	3,735	7,256	8,167	8,715	9,169
Landscape		2,381	2,613				
Sales to other agencies	Does not apply						
Saline barriers							
Groundwater recharge							
Conjunctive use							
Recycled Landscape	0	0	25	200	400	600	800
Sub-total	**21,101**	**20,758**	**21,939**	**25,661**	**29,057**	**31,180**	**32,973**
Unaccounted-for losses	**1,266**	**1,245**	**1,316**	**1,539**	**1,743**	**1,870**	**1,977**
Raw Water Irrigation	Included Above as Recycled Landscape						
Total	**22,367**	**22,003**	**23,255**	**27,200**	**30,800**	**33,050**	**34,950**

[3] *Tables 4 - 2 through 4 - 16 are adapted from Tables 4, 6, and 7 in "2000 Urban Water Management Planning Act Checklist* and Worksheets," published by the California Department of Water Resources.

Table 4 - 3 shows the projected number of connections to Santa Rosa's water distribution system, by sector. Information was provided by the City of Santa Rosa, as available. Connection numbers for the year 2000 are based on actual accounts in service.

Table 4 - 3
Number of Connections by Customer Type
City of Santa Rosa

Customer Type	1990	1995	2000	2005	2010	2015	2020
Single/ Multi- family residential	33,337	34,700	38,250	41,206	44,391	47,821	51,517
Multi-family residential	1,331	2,664	2,850	3,070	3,308	3,563	3,839
Commercial	Included in Institutional and Governmental						
Industrial							
Institutional and Governmental	3,701	2,632	2,700	2,909	3,133	3,376	3,637
Landscape/recreation	Included above	1,246	1,500	1,616	1,741	1,875	2,020
Fire Services	0	0	760	819	882	950	1,024
Total	**38,369**	**41,242**	**46,060**	**49,620**	**53,455**	**57,585**	**62,037**

NORTH MARIN WATER DISTRICT

Table 4 - 4 shows the available water end-use data provided by North Marin Water District (NMWD). Data was provided for single-family residential, multi-family residential, commercial, and institutional and governmental uses. Multi-family residential includes townhouses/condominiums, apartments and mobile homes. NMWD has no industrial account classifications and landscape is included with institutional and governmental use. Raw water irrigation includes service to Indian Valley Golf Course and the County of Marin's Stafford Lake Park.

Table 4 – 4[4]
Past, Current and Projected Water End-Use
North Marin Water District
(acre-feet/year)

Water Use Sectors	1990	1995	2000	2005	2010	2015	2020
Single family residential	5,718	5,503	6,345	7,364	7,642	7,870	7,676
Multi-family residential	1,391	1,389	1,627	2,000	2,199	2,387	2,454
Commercial	1,033	1,070	1,675	2,100	2,348	2,600	2,722
Industrial							
Institutional and Governmental	894	843	370	445	479	512	517
Landscape							
Sales to other agencies							
Saline barriers							
Groundwater recharge	Does not apply						
Conjunctive use							
Agriculture							
Sub-total	**9,036**	**8,805**	**10,017**	**11,909**	**12,668**	**13,369**	**13,369**
Unaccounted-for losses	571	924	907	1,135	1,268	1,403	1,403
Raw Water Irrigation	359	206	250	250	250	250	250
Total	**9,966**	**9,935**	**11,174**	**13,294**	**14,186**	**15,022**	**15,022**

Table 4 - 5 shows the total number of equivalent single-family dwelling units projected to be served by NMWDs water distribution system through 2020. Projections were provided by NMWD and were not available by customer class.

Table 4 - 5
Number of Projected Equivalent Single-family Dwelling Units
North Marin Water District

Customer Type	1990	1995	2000	2005	2010	2015	2020
Total	**20,138**	**20,506**	**21,093**	**24,739**	**25,977**	**27,214**	**27,214**

[4] The data in Table 4 - 4 is from NMWD's water demand forecast based on development projections identified in the Marin Countywide Plan (Novato Planning Area and City of Novato General Plan). Historical increases in total water demand in NMWD's service area over the past decade have been less than 1 percent per year. The State Department of Health Services Report (Appendix a), which projects water use in 2020 to be 12,454 AF, has used the historical data to project future water demand without incorporating the development projections that were used in NMWD's water demand forecast.

Table 4 - 6 shows the available water end-use data provided by the City of Petaluma. The State Department of Health Services has projected an approximate 2% annual rate of growth for Petaluma and a corresponding demand of 13,900 AF for the year 2010. A 2% rate of growth would result in a projection of 16,945 acre-feet for the year 2020.

Table 4 – 6
Past, Current and Projected Water End-Use
City of Petaluma
(acre-feet/year)

Water Use Sectors	1990	1995	2000	2005	2010	2015	2020
Single family residential	4,957	5,240	6,286	6,717	7,182	7,499	7,834
Multi-family residential	582	592	824	880	942	983	1,027
Commercial	1,766	1,690	2,473	2,642	2,826	2,950	3,082
Industrial	101	422	309	330	353	369	385
Institutional and Governmental	520	507	412	440	471	491	513
Landscape	Does not apply						
Sales to other agencies							
Saline barriers							
Groundwater recharge							
Agriculture							
Sub-total	**7,926**	**8,451**	**10,304**	**11,009**	**11,774**	**12,292**	**12,841**
Unaccounted-for losses	644	865	896	957	1,024	1,069	1,117
Total	**8,570**	**9,316**	**11,200**	**11,996**	**12,798**	**13,361**	**13,958**

Table 4 - 7 shows the projected number of connections to Petaluma's water distribution system, by sector. Information was provided by the City of Petaluma, as available, and assumes a declining annual growth rate in all customer types over time as the inventory of vacant land within Petaluma declines. The State Department of Health Services provided historic information for 1993 and 1995.

Table 4 - 7
Number of Connections by Customer Type
City of Petaluma

Customer Type	1993	1995	2000	2005	2010	2015	2020
Single/ Multi- family residential	Breakdown not available		16,181	17,432	18,779	19,737	20,743
Multi-family residential			279	301	324	349	376
Commercial			1,296	1,396	1,504	1,581	1,661
Industrial			27	29	31	33	35
Institutional and Governmental			148	159	172	181	190
Other			9	10	10	11	12
Total	**15,575**	**16,502**	**17,940**	**19,327**	**20,820**	**21,892**	**23,017**

Table 4 - 8 shows the available water end-use data for the City of Rohnert Park. Specific information on water use sectors was not provided by Rohnert Park; therefore, no breakdown is shown. The total historic use data for 1993 and 1999 shown below is from the annual reports filed by Rohnert Park with the State Department of Health Services.[5] The total use projections for years 2000 to 2020 are based upon an average annual rate of growth in new connections of 1.08%, which occurred from 1993 through 1999 (8,221 connections to 8,700 connections).

Table 4 – 8
Past, Current and Projected Water End-Use
City of Rohnert Park
(acre-feet/year)

Water Use Sectors	1993	1999	2000	2005	2010	2015	2020
Single family residential	Breakdown by water use sector not available						
Multi-family residential							
Commercial							
Industrial							
Institutional and Governmental							
Landscape							
Sales to other agencies	Does not apply						
Saline barriers							
Groundwater recharge							
Conjunctive use							
Agriculture							
Sub-total	7,045	7,695	7,778	8,207	8,660	9,138	9,642
Unaccounted-for losses	Included above						
Raw Water Irrigation							
Other							
Total	7,045	7,695	7,778	8,207	8,660	9,138	9,642

Table 4 - 9 shows the total number of connections projected to be served by Rohnert Park's water distribution system through 2020. Projections are based on the assumption regarding rate of growth stated above.

4 - 9
Number of Connections
Rohnert Park

Customer Type	1993	1999	2000	2005	2010	2015	2020
Total	8,221	8,700	8,794	9,279	9,791	10,331	10,901

[5] California Department of Health Services, Sonoma County Water Adequacy Evaluation (Draft), August 2000. The Final DHS Report is included in Appendix A.

VALLEY OF THE MOON WATER DISTRICT

Table 4 - 10 shows the available water end-use data provided by Valley of the Moon Water District (VOMWD). Single family residential includes all residential service. The breakdown between residential and commercial is based upon a historical average of 85% residential and 15% commercial use. VOMWD use projections are based upon an assumed approximate 0.9% rate of growth. The State Department of Health Services has projected VOMWD's water use at 3,790 AF for the year 2010 based upon a slightly lower annual rate of growth.

Table 4 - 10
Past, Current and Projected Water End-Use
Valley of the Moon Water District
(acre-feet/year)

Water Use Sectors	1990	1995	2000	2005	2010	2015	2020
Single family residential							
Mufti-family residential	2,651	2,741	3,002	3,137	3,273	3,408	3,543
Commercial							
Industrial							
Institutional and Governmental	452	484	530	554	577	601	625
Landscape							
Sales to other agencies							
Saline barriers							
Groundwater recharge	Does not apply						
Conjunctive use							
Agriculture							
Sub-total	**3,103**	**3,225**	**3,532**	**3,691**	**3,850**	**4,009**	**4,168**
Unaccounted-for losses	435	374[6]	283	295	308	321	333
Total	**3,538**	**3,599**	**3,815**	**3,986**	**4,158**	**4,330**	**4,501**

Table 4 - 11 shows the projected number of connections to VOMWDs water distribution system, by sector. Information was provided by VOMWD, as available, and assumes average growth of 3% every five years.

Table **4 - 11**
Number of Connections by Customer Type
Valley of the Moon Water District

Customer Type	1990	1995	2000	2005	2010	2015	2020
Single family residential	5,727	5,921	6,019	6,166	6,321	6,483	6,651
Mufti-family residential	304	356	396	436	476	516	556
Commercial							
Industrial	193	198	206	214	220	226	232
Institutional and Governmental							
Landscape/recreation	19	22	27	31	35	39	43
Total	**6,243**	**6,497**	**6,648**	**6,847**	**7,052**	**7,264**	**7,482**

[6] The apparent decrease in unaccounted for losses may be attributed to replacement of some VOMWD distribution pipes. Page 4-7

Table 4 - 12 shows the available water end-use data provided by the City of Sonoma. The water use information is based upon billing information that was obtained from Sonoma's Finance Department. Growth information was obtained from Sonoma's Planning Department and is based upon historical data. Projections are based upon an assumed approximate 2% annual rate of growth. The State Department of Health Services has projected City of Sonoma water use at 2,820 acre-feet for the year 2010 based upon an approximate 1.4% annual rate of growth. This lower rate of growth would result in a projection of 3,240 acre-feet for the year 2020.

Table 4 – 12
Past, Current and Projected Water End-Use
City of Sonoma
(acre-feet/year)

Water Use Sectors	1990	1995	2000	2005	2010	2015	2020
Single family Residential	1,656	1,582	1,787	2,028	2,235	2,442	2,648
Multi-family residential							
Commercial	212	201	227	258	284	311	336
Industrial	202	197	222	252	278	304	330
Institutional and Governmental							
Landscape	151	137	156	176	194	212	230
Sales to other agencies	Does not apply						
Saline barriers							
Groundwater recharge							
Conjunctive use							
Agriculture							
Sub-total	**2,221**	**2,117**	**2,392**	**2,714**	**2,991**	**3,269**	**3,544**
Unaccounted-for losses	Included above						
Total	**2,221**	**2,117**	**2,392**	**2,714**	**2,991**	**3,269**	**3,544**

Table 4 - 13 shows historical and projected service connections by customer type. The assumptions upon which these data are based is the same as identified above.

Table 4 - 13
Number of Connections by Customer Type
City of Sonoma

Customer Type	1990	1995	2000	2005	2010	2015	2020
Single family residential	2,366	2,603	2,652	3,010	3,316	3,622	3,928
Multi-family residential							
Commercial	301	331	337	383	422	461	499
Industrial	295	324	330	375	413	451	489
Institutional and Governmental							
Landscape/recreation	205	226	231	262	288	315	342
Total	**3,167**	**3,484**	**3,550**	**4,030**	**4,439**	**4,849**	**5,258**

CITY OF COTATI -

Table 4 - 14 shows the available water end-use data provided by the City of Cotati. Cotati only provided total water use data; therefore, no breakdown is shown. Cotati's water use projections are based upon an approximate 3% annual rate of growth and were expressed as the peak delivery rate in millions of gallons per day (mgd). These were converted to annual use based upon an assumed ratio of peak delivery rate to annual use of 2.0. The State Department of Health Services has projected City of Cotati water use at 1,300 acre-feet for the year 2010 based upon an approximate 2% annual rate of growth. This rate of growth would result in a projection of 1,585 acre-feet for the year 2020.

Table 4 --14

P s Current and Projected Water End-Use
City of Cotati
(acre-feet/year)

Water Use Sectors	1990	1995	2000	2005	2010	2015	2020
Single family residential	Breakdown by water use sector not available						
Multi-family residential							
Commercial							
Industrial							
Institutional and Governmental							
Landscape							
Sales to other agencies	Does not apply						
Saline barriers							
Groundwater recharge							
Conjunctive use							
Agriculture							
Sub-total	1,075	907	1,178	1,366	1,583	1,836	2,128
Unaccounted-for losses	Included above						
Raw Water Irrigation							
Total	1,075	907	1,178	1,366	1,583	1,836	2,128

Table 4 - 15 shows the number of connections, by customer type, in 2000. Cotati provided the connections shown below; however, no historical or projection data was provided.

Table 4 by **Customer** Type
Number of Connections

Customer Type	1990	1995	2000	2005	2010	2015	2020
Single family residential	Unavailable/Not provided		1,796	Unavailable/Not provided			
Multi-family residential			95				
Commercial			151				
Industrial							
Institutional and Governmental			34				
Landscape/recreation			98				
Total			2,174				

FORESTVILLE WATER DISTRICT -

Table 4 - 16 shows the available water end-use data provided by the Forestville Water District (FWD). FWD use projections are based upon an assumed approximate 0.4% rate of annual growth. This rate is just slightly lower than the 0.5% annual rate of growth in new connections that the State Department of Health Services reported actually occurred in the FWD service area from 1993 to 1999.

Table 4 – 16
Past, Current and Projected Water End-Use
Forestville Water District
(acre-feet/year)

Water Use Sectors	1990	1995	2000	2005	2010	2015	2020
Single family residential	263	290	285	289	292	297	300
Multi-family residential	19	28	44	47	49	51	53
Industrial	3	17	20	21	22	22	22
Commercial	46	76	81	83	84	86	88
Institutional and Governmental							
Landscape		16	18	18	18	19	20
Sales to other agencies	Does not apply						
Saline barriers							
Groundwater recharge							
Conjunctive use							
Agriculture							
Sub-total	**331**	**427**	**448**	**458**	**465**	**475**	**483**
Unaccounted-for losses	47	30	14	13	13	13	13
Other	93	36	18	18	18	18	18
Total	**471**	**493**	**480**	**489**	**496**	**506**	**514**

Table 4 - 17, shows historical and projected service connections by customer type. Data was provided by the FWD and assumes a 0.4% average annual growth in connections.

Table 4 - 17
Number of Connections by Customer Type
Forestville Water District

Customer Type	1990	1995	2000	2005	2010	2015	2020
Single/ Multi- family residential	721	748	763	773	783	793	803
Multi-family residential	32	57	59	63	66	69	72
Commercial	42	44	51	52	53	54	55
Industrial	3	3	3	3	3	3	3
Institutional and Governmental	6	8	8	8	8	8	8
Landscape/recreation	0	5	8	8	8	8	8
Other	35	11	21	20	20	20	20
Total	**839**	**876**	**913**	**927**	**941**	**955**	**969**

CHAPTER 5

Supply and Demand Comparison

Water Code: 910635(a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from the state, regional, or local agency population projections within the service area of the urban water supplier.

AGENCY SUPPLY AND DEMAND COMPARISON

Table 5 - 1 compares the total water supply available to the Agency's water transmission system in an average water year with projected total water use over the next 20 years, in five-year increments.

Table 5 - 1[1]
Average Year
Projected Supply and Demand Comparison (acre-feet/year)
Sonoma County Water Agency

	2000	2005	2010	2015	2020
Supply totals[2]	215,945	214,945	213,945	212,945	211,945
Demand totals[3]	60,692	70,070	79,960	82,744	84,791
Difference	**155,253**	**144,875**	**133,985**	**130,201**	**127,154**

Table 5 - 2, compares the total water supply available to the Agency's water transmission system in a single dry water year with projected total water use over the next 20 years, in five-year increments.

1 Tables 5 - 1 through 5 - 3 are adapted from Table 18 in "2000 Urban Water Management Planning Act Checklist and Worksheets," published by the California Department of Water Resources.

[2] For 2000 - Calculated as sum of surface water supply available to Agency's transmission system during an average year and reliable capacity of Agency's existing wells. Subsequent five year increments take into account reduced surface water supply due to sedimentation. This information is available in Chapter 3.

[3] From Table 4 -1 in Chapter 4.

Table 5 - 2 Single Dry Year Projected Supply and Demand Comparison (acre-feet/year) Sonoma County Water Agency					
	2000	2005	2010	2015	2020
Supply totals[4]	90,995	89,995	88,995	87,995	86,995
Demand totals[5]	60,692	70,070	79,960	82,744	84,791
Difference	**30,303**	**19,925**	**9,035**	**5,251**	**2,204**

Table 5 - 3 compares the total water supply available to the Agency's water transmission system in multiple dry water years with projected total water use over the next 20 years, in five-year increments.

Table 5 - 3 Multiple Dry Year Projected Supply and Demand Comparison (acre-feet/year) Sonoma County Water Agency					
	2000	2005	2010	2015	2020
Supply totals[6]	130,885	129,885	128,885	127,885	126,885
Demand totals[7]	60,692	70,070	79,960	82,744	84,791
Difference	**70,193**	**59,815**	**48,925**	**45,141**	**42,094**

WATER CONTRACTORS SUPPLY AND DEMAND COMPARISON

This section compares the water supply available to each of the water contractors with projected demands. Supply and demand projections in this section correspond with the projections reported in Chapter 3, Water Supply Sources, and Chapter 4, Water Use. Water supply projections are based upon the estimates of the water contractors, and in some cases, are less than water supply available through the Water Supply and Transmission System Project (WSTSP). End-use demand projections are also based upon the estimates of the water contractors, and in some cases, differ from projections made by the Department of Health Services. For additional discussion of these discrepancies, refer to the text in Chapter 3 and/or Chapter 4 for the water contractor(s) of interest.

°For 2000 - Calculated as sum of surface water supply available to Agency's transmission system during a single dry year and reliable capacity of Agency's existing wells. Subsequent five year increments take into account reduced surface water supply due to sedimentation. This information is available in Chapter 3.

[5] *From Table 4 -1 in Chapter 4.* [6] *From Table 3 - 1 in Chapter 3.* [7] *From Table 4 -1 in Chapter 4.*

CITY OF SANTA ROSA

Table 5 - 4 compares the total water supply available to the City of Santa Rosa with estimates of projected demand. No deficits are projected through 2020.

Table 5 – 4[8]
Projected Supply and Demand Comparison (acre-feet/year)
City of Santa Rosa

	2000	2005	2010	2015	2020
Supply totals[9]	23,337	27,200	30,800	33,050	34,950
Demand totals[10]	23,255	27,200	30,800	33,050	34,950
Difference	**82**	**0**	**0**	**0**	**0**

NORTH MARIN WATER DISTRICT

Table 5 - 5 compares the total water supply available to North Marin Water District with projected demand. No deficits are projected through 2020.

Table 5 - 5
Projected Supply and Demand Comparison (acre-feet/year)
North Marin Water District

	2000	2005	2010	2015	2020
Supply totals[11]	11,174	13,294	14,186	15,022	15,022
Demand totals[12]	11,174	13,294	14,186	15,022	15,022
Difference	**0**	**0**	**0**	**0**	**0**

CITY OF PETALUMA

Table 5 - 6 compares the total water supply available to the City of Petaluma with total projected demands. No deficits are projected through 2020.

[8] Tables 5 - 4 through 5 - 11 are adapted from Table 18 in "2000 Urban Water Management Planning Act Checklist and Worksheets," published by the California Department of Water Resources.
[9] From Table 3 - 2 in Chapter 3. [10] From Table 4 - 2 in Chapter 4. [11] From Table 3 - 3 in Chapter 3. [12] From Table 4 - 4 in Chapter 4.

Table 5 - 6 Projected Supply and Demand Comparison (acre-feet/year) City of Petaluma					
	2000	2005	2010	2015	2020
Supply totals[13]	11,200	11,966	12,798	13,361	13,958
Demand totals[14]	11,200	11,966	12,798	13,361	13,958
Difference	0	0	0	0	0

CITY OF ROHNERT PARK.

Table 5 - 7 compares the total water supply available to the City of Rohnert Park with total projected demands. No deficits are projected through 2020.

Table 5 - 7 Projected Supply and Demand Comparison (acre-feet/year) City of Rohnert Park					
	2000	2005	2010	2015	2020
Supply totals[15]	7,778	8,207	8,660	9,138	9,642
Demand totals[16]	7,778	8,207	8,660	9,138	9,642
Difference	0	0	0	0	0

VALLEY OF THE MOON WATER DISTRICT.

Table 5 - 8 compares the total water supply available to Valley of the Moon Water District with total projected demands. No deficits are projected through 2020.

Table 5 - 8 Projected Supply and Demand Comparison (acre-feet/year) Valley of the Moon Water District					
	2000	2005	2010	2015	2020
Supply totals[17]	3,815	3,986	4,158	4,330	4,501
Demand totals[18]	3,815	3,986	4,158	4,330	4,501
Difference	0	0	0	0	0

[13] Fr . ! Table 3 - 4 in Chapter 3.
[14] From Table 4 - 6 in Chapter 4.
[15] From Table 3 - 5 in Chapter 3.
[16] From Table 4 - 8 in Chapter 4.
[17] From Table 3 - 6 in Chapter 3.
[18] From Table 4 - 10 in Chapter 4.

FORESTVILLE WATER DISTRICT

Table 4 - 16 shows the available water end-use data provided by the Forestville Water District (FWD). FWD use projections are based upon an assumed approximate 0.4% rate of annual growth. This rate is just slightly lower than the 0.5% annual rate of growth in new connections that the State Department of Health Services reported actually occurred in the FWD service area from 1993 to 1999.

Table 4 – 16
Past, Current and Projected Water End-Use
Forestville Water District
(acre-feet/year)

Water Use Sectors	1990	1995	2000	2005	2010	2015	2020
Single family residential	263	290	285	289	292	297	300
Multi-family residential	19	28	44	47	49	51	53
Industrial	3	17	20	21	22	22	22
Commercial	46	76	81	83	84	86	88
Institutional and Governmental							
Landscape		16	18	18	18	19	20
Sales to other agencies	Does not apply						
Saline barriers							
Groundwater recharge							
Conjunctive use							
Agriculture							
Sub-total	**331**	**427**	**448**	**458**	**465**	**475**	**483**
Unaccounted-for losses	47	30	14	13	13	13	13
Other	93	36	18	18	18	18	18
Total	**471**	**493**	**480**	**489**	**496**	**506**	**514**

Table 4 - 17, shows historical and projected service connections by customer type. Data was provided by the FWD and assumes a 0.4% average annual growth in connections.

Table 4 - 17
Number of Connections by Customer Type
Forestville Water District

Customer Type	1990	1995	2000	2005	2010	2015	2020
Single/ Multi- family residential	721	748	763	773	783	793	803
Multi-family residential	32	57	59	63	66	69	72
Commercial	42	44	51	52	53	54	55
Industrial	3	3	3	3	3	3	3
Institutional and Governmental	6	8	8	8	8	8	8
Landscape/recreation	0	5	8	8	8	8	8
Other	35	11	21	20	20	20	20
Total	**839**	**876**	**913**	**927**	**941**	**955**	**969**