

6.0 PAST, CURRENT AND PROJECTED WATER USE

This section presents information regarding demographics, current and past water use, and projections of future City water demands. This section also discusses the City’s current and planned demand management strategies and the impact that these will have on overall water demands. The detailed analysis supporting this section is found in Appendix G.

Based on the analysis presented in this Section, the City anticipates a total annual water demands as follows:

2005	2010	2015	2020	2025	2030
7,709.8 AFY	8,316.4 AFY	8,680.3 AFY	8,962.0 AFY	9067.3 AFY	9,131.3 AFY

6.1 Current and Projected City Land Uses

The City’s General Plan describes the City’s land use plans, projected growth and growth management strategies. The General Plan outlines a balanced land use strategy that provides for both housing and economic growth. The General Plan includes policies that implement the City’s voter-approved Growth Management Ordinance. In 2004, the City utilized its General Plan to develop Table 6-1 below which outlines projected land uses consistent with the categories defined in Section 10631(e)(1) of the Act. In 2004, the City calculated that this land use pattern would result in a total annual water demand of 9,499 AFY in 2025.

Table 6-1 Projected Development Pattern

Land Use Class	Unit	2005	2010	2015	2020	2025
SFR Detached	EA	7,492	8,352	8,737	8,933	8,933
SFR Attached	EA	3,039	3,518	3,631	3,744	3,744
MFR & Mobile	EA	6,035	6,696	7,336	7,687	7,687
Commercial/ Retail	AC	322	407	437	467	467
Industrial	AC	328	371	436	500	500
Office	AC	47	54	68	77	77
Public	AC	93	93	93	93	93
Irrigation –potable	AC	70	28	28	28	28
Irrigation - recycled	AC	452	536	546	546	546

These land use classes are consistent with the General Plan but do not reflect the Customer Classes included in the City’s billing database.

6.2 Base Water Use Projections

6.2.1 Past Water Use

Because the City installed single-family residential water meters in 2003, it does not have a long period of record for metered water use per customer class. However, the City does have data on total water use including well pumpage records and water sale records from both the Agency and the Subregional System. A weather-normalized, linear regression analysis was performed on the City’s total potable water use in order to arrive at an estimate of per capita water use for the purposes of future planning. A summary of this analysis is included in Appendix G-1, which

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includes both residential and commercial demand factors (June 24, 2005 and October 26, 2005 Memorandum both by Maddaus Water Management).

The linear regression analysis indicates that between 1995 and 2005 the City’s per capita consumption was reduced from approximately 175 gallons per capita per day (gpcd) to approximately 140 gpcd. With the City’s “average household size” of approximately 2.6 persons per household, this translates into an average residential demand of approximately 380 gallons per day per residential account. Four major factors have contributed to this reduction in demand including:

- The Rohnert Park Urban Reuse System became operational in the late 1990s. As a result, recycled water use offset potable water use and reduced the overall demand on the potable water system.
- The City replaced over 9,000 residential toilets with low-flow toilets resulting in reduced system demand.
- The City, with the assistance of a DWR grant, installed residential water meters and began commodity-based pricing of its water resulting in reduced system demand.
- The City experienced the loss of a major industrial land use which resulted in temporarily reduced system demand. The City anticipates demand will recover as the land use is redeveloped. The demand projections are based on metered connections and, hence, will model recovery of this demand.

The results of the linear regression analysis were used to arrive at estimated base year water use factors for various Customer Classes included in the City’s water billing database. These are presented in Table 6-2 below. The estimated base year water use factor for new single family residential uses was set higher than existing users. As described in Section 6.3, below, there is a class of Best Management Practices applied specifically to New Development that adjusts this demand based on conservation practices that are uniquely applicable to new construction.

Table 6-2 Base Year Water Use Factors

Customer Class	Water Use Factor (gpd/account)
Single Family	380
Multifamily ^a	2,740
Commercial ^a	1,980
Institutional/Industrial ^a	2,520
New Single Family	395
<small>a Each Multifamily account includes multiple residential units therefore the Multi-Family count will not correspond to Land Use based projections which make estimates based on individual units. Each Non-Residential account includes a single meter. The property served by the meter may be more or less than one acre in size, therefore the customer class count will not correspond to the land use projections, which are based on acreage.</small>	

6.2.2 Base Demand Projections

Working with the Agency, the City developed a Water Demand Model that projected future water use based on input data including past water use, planned land use patterns, and the effects of the Plumbing Code changes. This modeling effort is documented in a memorandum titled

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Customer Water Demand Projections City of Rohnert Park Summary of Data Inputs, Assumptions and Results (Maddaus Water Management, November 7, 2005 hereinafter the Water Demand Projections Memo), which is included as Appendix G-2.

The Water Demand Model used Customer Classes from the City’s water billing database. These customer classes are based on actual metered water connections, which differ from the General Plan Land Use data for two principal reasons:

- The General Plan land use data accounts for individual multi-family residences. However, multi-family residences are not “sub-metered” therefore a single multi-family connection will include multiple units;
- The General Plan land use data accounts for non-residential land uses by acreage. However, non-residential land uses are individually metered and these connections may be more or less than 1 acre.

The General Plan growth projections were applied to the various Customer Classes in the water billing database to arrive at a reasonable projection of growth in Customer Classes. These projections are discussed in Appendix G-2 and presented in Table 6-3 below in accordance with Section 10631(e) (1) of the Act.

Table 6-3 Customer Classes – Current and Projected

Year	Number of Accounts per Customer Class ^a					Total
	Single-Family	Multifamily	Commercial	Institutional-Industrial	New Single Family	
2000	N/A	N/A	N/A	N/A	N/A	8,794
2005	7,655	438	623	24	166	8,907
2010	7,655	479	649	25	999	9,807
2015	7,655	511	675	26	1,604	10,471
2020	7,655	544	701	27	2,206	11,134
2025	7,655	544	771	30	2,206	11,206
2030	7,655	544	812	32	2,206	11,248

^a Customer Classes from the water billing database will not conform to General Plan projections for multifamily and non-residential land uses for the reasons described above. The Single Family and New Single Family classes are consistent with the General Plan.

This Water Demand Projection Memo was used by the Agency to develop its 2005 Plan and during that process the model output was adjusted to account for inaccuracies created by rounding some of the input variables and results. This adjustment rounding resulted in an approximately 0.5% decrease in predicted demands. The adjustment is summarized by the *DSS Model Output in Graphical Form Spreadsheet* (Maddaus Water Management, March 26, 2006), which is also included in Appendix G-2. In the Agency’s 2005 Plan, the adjustment was applied to the City’s total demands and was not carried through to the individual customer classes. For this Plan, the City performed the calculations necessary to carry the rounding adjustments documented in the *DSS Model Output in Graphical Form Spreadsheet* back through the individual customer classes. This calculation is included in Appendix G-2.

Table 6-4 below presents demands by Customer Class. As noted above, because the City applied the rounding adjustments to each class, these demands are slightly lower than indicated in the

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Water Demand Projections Memo, though the totals are consistent with the final conclusions presented in the Agency’s 2005 Plan.

Table 6-4 (DWR Table 12) Past, Current, and Projected Water Deliveries

			Customer Classes					
			Single-Family	Multifamily	Commercial	Institutional-Industrial	New Single Family	Total
2000 ^a	Un-metered	# of accounts	N/A	N/A	N/A	N/A	N/A	8,794
		Deliveries AFY	N/A	N/A	N/A	N/A	N/A	7,222
2005	Metered	# of accounts	7,655	438	623	24	166	8,907
		Deliveries AFY	3,256.0	1,368.0	1,380.0	68.0	74.0	6,146.0
2010	Metered	# of accounts	7,655	479	649	25	999	9,807
		Deliveries AFY	3,226.6	1,456.1	1,424.2	70.7	439.9	6,617.5
2015	Metered	# of accounts	7,655	511	675	26	1,604	10,471
		Deliveries AFY	3,203.0	1,516.4	1,474.6	73.6	706.5	6,974.1
2020	Metered	# of accounts	7,655	544	701	27	2,206	11,134
		Deliveries AFY	3,176.2	1,574.1	1,528	76.6	971.2	7,325.5
2025	Metered	# of accounts	7,655	544	771	30	2,206	11,206
		Deliveries AFY	3,151.4	1,555.8	1,673.2	83.6	971.5	7,436.5
2030	Metered	# of accounts	7,655	544	812	32	2,206	11,248
		Deliveries AFY	3,132.7	1,543.5	1,759.4	88.6	971.3	7,495.5

Source: “Customer Demand Projections, City of Rohnert Park Summary of Data Inputs, Assumptions, and Results”, Maddaus Water Management, November 7, 2005 with adjustments to match DSS Model Output in Graphic Form, Maddaus Water Management, May 26, 2006.

6.2.3 Unaccounted-for Water and Additional Water Use

Unaccounted-for-water is un-metered water use, such as that used for fire protection and training, system and street flushing, sewer cleaning, construction, system leaks, as well as that used by unauthorized connections. Unaccounted-for water use can also result from meter inaccuracies. Finally, the City’s unaccounted-for-water calculations include its recycled water use because this use was not accounted for in the demand projections developed from potable water system data. Table 6-5 provides the estimated quantity of unaccounted-for-water. More details on the assumptions made to estimate system losses are presented in Appendix G-2.

At this time, the City does not use water for groundwater recharge, to prevent salt water intrusion (saline barriers), or for other conjunctive uses. The City has a recycled water supply, described in Chapter 5. The existing demands on this supply average at approximately 1,000 AFY and this

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average demand is presented in Table 6-5. The City anticipates that some future irrigation demands will also be met by recycled water, and this future use is also accounted for in Table 6-5.

Table 6-5 (DWR Table 14) Additional Water Uses and Losses

Water Use	2000 AFY	2005 AFY	2010 AFY	2015 AFY	2020 AFY	2025 AFY	2030 AFY
Saline barriers	0	0	0	0	0	0	0
Groundwater recharge	0	0	0	0	0	0	0
Conjunctive use	0	0	0	0	0	0	0
Raw water	0	0	0	0	0	0	0
Recycled	1,000	1,000	1,200	1,300	1,300	1,300	1,300
Other	0	0	0	0	0	0	0
Unaccounted-for system losses	NA	633.0	717.6	757.2	795.0	804.3	814.0
Total	1,000	1,633.0	1,917.6	2,057.2	2,095.0	2,104.3	2,114.0

Source: "Customer Demand Projections, City of Rohnert Park Summary of Data Inputs, Assumptions, and Results", Maddaus Water Management, November 7, 2005

6.2.4 Water Sales to Other Agencies

The City does not currently sell water to other agencies.

6.3 Demand Management

6.3.1 Current Demand Management Practices

The City is a member of the California Urban Water Conservation Council (CUWCC) and a signatory to the Memorandum of Understanding Regarding Urban Water Conservation (MOU). As signatory to the MOU, the City has pledged its good faith effort towards implementing 14 Best Management Practices (BMPs) related to urban water conservation. The City signed the CUWCC MOU on June 12, 2002. The City implements BMPs and submits reports with assistance from the Agency.

Urban water suppliers that are members of the CUWCC may submit their most recent BMP Annual Report for reporting years 2003-04 to meet the requirements of DWR Water Code Section 10631 (f). It is also recommended that urban water suppliers include the Coverage Reports identifying the water supplier's progress on meeting the coverage requirement for quantifiable BMPs. The City's annual BMP Reports and Coverage Reports are included in Appendix H.

6.3.2 Projected Savings from Planned Water Conservation and New Development Standards

Together with the Agency, the City and the other Contractors developed three major conservation strategies that could result in savings beyond that modeled for BMP implementation for existing customers and plumbing code savings. This effort is discussed in detail in a memorandum titled *FINAL Tier Two and New Development Conservation Measure Evaluation Summary of Data Inputs, Assumptions and Results* (Maddaus Water Management,

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November 2, 2006), which is included as Appendix G-3. These methods are briefly described below and the predicted additional water savings are outlined in Table 6-6.

- Tier 1 Conservation for New Development: As noted above, the base demand factor for new development is higher than that for existing development. The Tier 1 Conservation for New Development savings are the water savings that are estimated to occur from the implementation of the 14 Best Management Practices by new development.
- Tier 2 Water Conservation: Tier 2 Water Conservation Measures include thirteen additional water management practices, which go beyond the 14 BMPs. These management practices could be employed by all development within the City and include such strategies as rebates and incentives for landscape irrigation upgrades, rebates and incentives for certain Commercial, Industrial and Institutional customers and rebates and incentives for high-efficiency residential appliances.
- New Development Standards: New development standards include eight water management strategies which can be incorporated by design for development. The standards include both indoor fixture standards and irrigation and landscape standards.

Table 6-6 Savings-Related Tier 2 Water Conservation and New Development Standards

	2005 AFY	2010 AFY	2015 AFY	2020 AFY	2025 AFY	2030 AFY
Tier 1 Water Conservation for Future	69.2	128.3	131.7	130.6	128.0	125.7
Tier 2 Water Conservation Measures	0	31.9	91.8	132.2	149.8	156.8
New Development Standards	0	58.5	127.5	195.7	195.7	195.7
Total	69.2	218.7	351.0	458.5	473.5	478.2

Source: "Final Tier Two and New Development Conservation Measure Evaluations Summary of Data Inputs, Assumptions, and Results", Maddaus Water Management, November 2, 2006.

6.4 Total Water Use

Total water use for the system is calculated by adding the demands presented in Table 6-4 to the unaccounted-for water presented in Table 6-5 and subtracting the additional water conservation savings presented in Table 6-6. This calculation is summarized in Table 6-7.

The City is managing its water supply portfolio in a manner consistent with the Temporary Impairment MOU. It is using local groundwater and recycled water supplies to meet peak demands and reduce the impacts on the Agency's system.

Table 6-7 (DWR Table 15) Total Water Use

Water Use	2000 AFY*	2005 AFY	2010 AFY	2015 AFY	2020 AFY	2025 AFY	2030 AFY
Single Family		3,256.0	3,226.6	3,203.0	3,176.2	3,151.4	3,132.0
Multi Family		1,368.0	1,456.1	1,516.4	1,574.1	1,555.8	1,543.5
Commercial		1,380.0	1,424.2	1,474.6	1,528.0	1,673.2	1,759.4
Institutional-Industrial		68.0	70.7	73.6	76.6	83.6	88.6
New Single Family		74.0	439.9	706.5	971.2	971.5	971.3
Subtotal	7,222.0	6,146.0	6,617.5	6,974.1	7,325.5	7,436.5	7,495.5
Additional Water Uses & Losses	1,000	1,633.0	1,917.6	2,057.2	2,095.0	2,104.3	2,114.0
Tier 2 & New Development		(69.2)	(218.7)	(351.0)	(458.5)	(473.5)	(478.2)
Total water use	8,222.0	7,709.8	8,316.4	8,680.3	8,962.0	9,067.3	9,131.3

*City did not have residential water meters in 2000, so water use data by demand class is not available. Demand on Wholesale Supply