CHAPTER 5

WATER USE CHARACTERIZATION AND FORECASTING

INTRODUCTION

Water use characterization is an important aspect of water system planning. By evaluating the historical trends in the amount of water purchased and consumed, peaking factors, and the customer population, it is possible to provide forecasts of future demands on the water system. This is necessary in order to assess the capacity of the District's existing facilities and design future water system facilities.

In this chapter, information from previous reports, water use records, transportation analysis zone (TAZ) data, and master meter flow data are used to estimate unit flow quantities for critical parameters related to population and equivalent residential units (ERUs) within the existing service area. Future demands for the entire service area are estimated through the 20-year planning period and for total buildout scenarios.

WATER USE CHARACTERIZATION

The District's customer base is composed of residential, commercial, and industrial connections. Approximately 63 percent of the District's total water is used by single-family residential customers.

WATER SERVICE CONNECTIONS

The total number of water service connections within the District at the end of 2013 was 21,093. The number of connections is discussed by customer type and location within various municipalities in the following sections.

Service Connections by Customer Class

The District classifies its customers based on various rate codes. For the purposes of this document, water usage has been divided into the following customer types: single-family residential (SFR); multifamily residential (MFR) including apartments, duplexes, condominiums, and mobile home parks; non-residential; fire services; and other purveyors. SFR is defined as single units with individual water service meters. Non-residential customers include commercial and industrial connections. These connections have meter sizes ranging from 3/4 inch to 6 inches. Fire services are connections reserved for fire lines, with meters ranging from 2 inches to 10 inches.

Table 5-1 provides a summary of the connections for the various types of customers for 2006-2013. Values in Table 5-1 indicate the number of connections at the end of each

year. As of 2013, ninety percent of the water service connections are for single-family residential homes.

TABLE 5-1

Active Water Service Connections by Customer Class (2006 – 2013)

Year	Single-Family Residential	Multi-Family Residential		Mobile Home Park	Non-Residential	Total
		Apartment & Duplexes	Condominium			
2006	17,963	643	610	12	817	20,045
2007	18,068	638	614	12	815	20,147
2008	18,189	645	654	12	813	20,313
2009	18,295	652	685	12	813	20,457
2010	18,444	609	706	12	825	20,596
2011	18,558	592	726	12	830	20,718
2012	18,715	578	743	12	831	20,880
2013	18,915	562	761	12	844	21,093
2013 Total	**90%**	**3%**	**4%**	**0.1%**	**4%**	**100%**

Source: Northshore Utility District billing records.

Service Connections by Municipality within District

The District provides water service to a number of different municipalities within its water service boundary. The allocation of water service connections within the District for the Cities of Bothell, Lake Forest Park, Kenmore, and Kirkland are based on meter records. Table 5-2 provides an estimate of the number of water service connections in each municipality that the District serves. As of February 28, 2014, there is no longer any unincorporated property located within the District. All property has been annexed into one of the cities listed above.

TABLE 5-2

Percent of Water Service Connections per Municipal Entity (2012)

Municipality	Percent of Water Service Connections
Bothell	13%
Kenmore	31%
Kirkland	50%
Lake Forest Park	6%
Total	**100%**

Source: Northshore Utility District billing records.

WATER USE

Water use in the District can be segregated into three elements: master meter flow, customer consumption, and Distribution System Leakage (DSL). These three elements are discussed in the following sections.

Historical Annual Master Meter Flow

The connections to the SPU water supply lines are metered by both SPU and the District. The SPU meters are used to determine the amount of water use that is billed to the District. The District's master meters are connected to the SCADA system and allow the District to track the amount of water supplied by SPU and determine the total system demand. Table 5-3 provides a summary of the historical annual master meter flow data and the average daily master meter flow based on the SPU end-of-month billing records.

TABLE 5-3

Historical Master Meter Flow

Year	Total SPU Master Meter Flow (CCF)[1]	Total SPU Master Meter Flow (MG)[2]	Average Day SPU Master Meter Flow (mgd)
2006	2,587,227	1,935	5.30
2007	2,555,901	1,912	5.24
2008	2,441,109	1,826	4.99
2009	2,574,352	1,926	5.28
2010	2,394,673	1,791	4.91
2011	2,463,953	1,843	5.05
2012	2,451,174	1,833	5.01
2013	2,486,656	1,860	5.10
Average	**2,494,381**	**1,866**	**5.11**

Source: Northshore Utility District bills from SPU.
(1) CCF stands for hundred cubic feet and is equivalent to 748 gallons.
(2) MG stands for million gallons.

Table 5-4 provides the retail water service area population, average master meter flow, and average master meter flow per capita. The water service area population in Table 5-4 is estimated by using 2000 and 2010 census data and interpolating for the years in between. Beyond 2010, the average growth was extrapolated 3 years to 2013. Based on the 2000 Census population of 63,918 and the 2010 population of 65,632, the population growth rate during this period was 0.26 percent per year. The per capita master meter flow averaged 77.5 gallons per capita per day (gpcd) between 2006 and 2013. This value includes all water uses, including residential, non-residential, and DSL.

TABLE 5-4

Historical Per Capita Master Meter Flow

Year	Water Service Area Population[(1)]	Average Daily Master Meter Flow (mgd)	Per Capita Master Meter Flow (gpcd)
2006	64,946	5.30	81.6
2007	65,118	5.24	80.4
2008	65,289	4.99	76.4
2009	65,460	5.28	80.6
2010	65,632	4.91	74.8
2011	66,327	5.05	76.1
2012	67,022	5.01	74.7
2013	67,717	5.10	75.3
Average	**-**	**5.11**	**77.5**

(1) Population estimates are in Chapter 3.

Peak Season and Maximum Month Water Demand

The District's contract with SPU contains a maximum average flow rate during the peak season and maximum month of each calendar year. The peak season is defined as "June 1 through September 30 of the same calendar year," and the maximum month is defined as "the consecutive 30-day period during a calendar year in which NUD puts its maximum demand upon the Seattle water system." Per the SPU contract, the allowable peak season flow rate is 11.97 mgd, and the allowable peak month flow rate is 14.96 mgd.

Table 5-5 provides a summary of historical peak season and peak month master meter flow.

TABLE 5-5

Historical Peak Season and Maximum Month Master Meter Flow

Year	Peak Season Average Day Demand[(1)]		Maximum Month Average Day Demand	
	Master Meter Flow (mgd)	Peaking Factor[(2)]	Master Meter Flow (mgd)	Peaking Factor[(2)]
2006	6.67	1.26	8.10	1.53
2007	6.58	1.26	8.21	1.57
2008	6.20	1.24	7.69	1.54
2009	7.19	1.36	7.69	1.46
2010	6.48	1.32	8.98	1.83
2011	6.29	1.25	8.54	1.69
2012	6.64	1.33	7.37	1.47
2013	6.18	1.21	7.69	1.51
Average	**6.53**	**1.28**	**8.04**	**1.57**

(1) June 1 to September 30.
(2) Peaking factors are equal to the peak demand average day master meter flow divided by annual average daily master meter flow.

Maximum Day Water Demand

Maximum day demand is the maximum amount of water used in the highest use 24-hour period for the year. Maximum day demands usually occur during the summer months due to the added demands of irrigation.

The District's SCADA records were used to determine the historical maximum day demands on the system. The records include all water purchased from SPU through the master meters. The amount of water drawn from storage is generally not considered when determining the maximum day demand because it is assumed that source of supply is capable of providing the necessary water. Table 5-6 presents the historical maximum day demands and the maximum day to average day peaking factors.

TABLE 5-6

Historical Maximum Day Demand

Year	Average Day Demand[(1)] (mgd)	Maximum Day Master Meter Flow[(2)] (mgd)	Maximum Day Demand[(3)] (mgd)
2013	5.10	9.46	1.86
Average from 2009 WSP	5.70	9.77	1.77

(1) Average day demand from Table 5-4.
(2) Maximum day master meter flow is the highest total flow through the SPU master meters.
(3) From District SCADA data logs. MDD has not been adjusted for reservoir change in volume. SCADA data not available for reservoir status in 2013 and SCADA data for daily flow not available from 2006-2012.

The peaking factor shown for 2013 in Table 5-6 is 1.86. However, considering a lack of other historic data, a conservative maximum day to average day peaking factor of 2.0 is used to project future maximum day demands on the system discussed later in this Chapter.

Peak Hour Water Demand

Data collected in the District's SCADA system was used to determine peak hour demand. The SCADA system divides the District into four areas, based on reservoir service or source: Inglemoor, Westhill, Lake Forest Park, and Norway Hill/Kingsgate. Graphs showing the varying hourly demands in each of these four areas were evaluated for the peak 24-hour period of water use. The peak hour demand was calculated as the maximum total demand of the system in a given hour on that peak day. The historical peak hour demand estimated from the District's system is shown in Table 5-7. "Demand" is defined as the total amount of water being used by District customers and lost water provided from a combination of master meters and District water storage reservoirs.

TABLE 5-7

Historical Peak Hour Demand

Date	Maximum Day Consumption (mgd)[(1)]	Peak Hour Consumption (gpm)[(2)]	Peaking Factor (PHD/MDD)
2013	9.46	11,202	1.70
Average from 2009 WSP	9.77	11,511	1.69

Source: Northshore Utility District SCADA data.
(1) From Table 5-6.
(2) From District SCADA data logs. SCADA data for flow not available form 2006-2012.

The peak hour factor from 2013 was 1.70. To be conservative, a peak hour to maximum day peaking factor of 2.0 will be used to project peak hour demands on the system discussed later in this Chapter.

Figure 5-1 provides a diurnal curve as measured on July 25, 2013, which was the date of the maximum day demand in 2013.

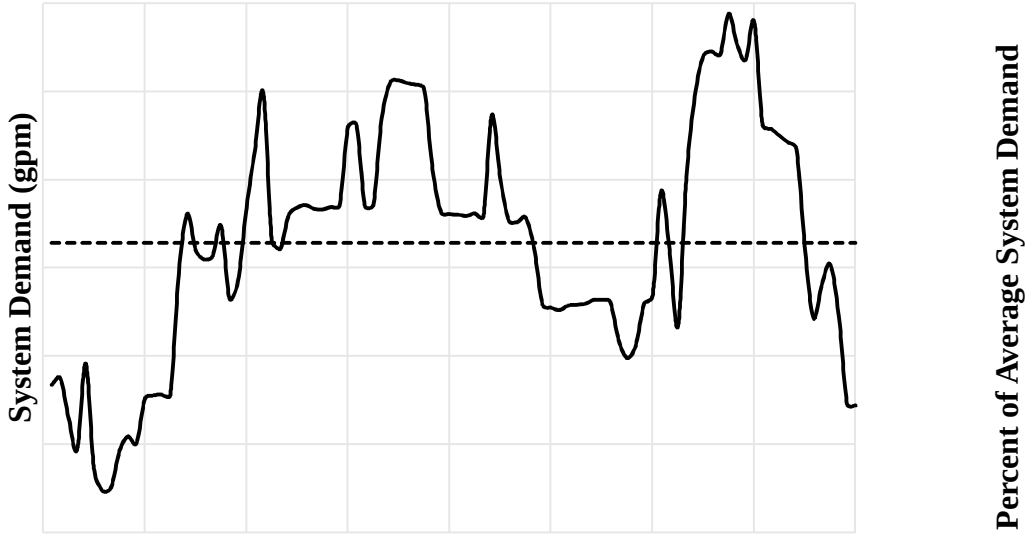

FIGURE 5-1

Water Demand Diurnal Curve from July 25, 2013

Consumption History

District water consumption is measured at individual service meters. Customers are billed for water service every 2 months. The District's water consumption by customer class is presented in Table 5-8.

TABLE 5-8

Historical Consumption by Customer Class

Year	Single-Family Residential (MG)	Multi-Family Residential			Non-Residential (MG)	Other Purveyor (MG)	Total (MG)	mgd
		Apartment & Duplex (MG)	Condominium (MG)	Mobile Home Park (MG)				
2006	1,277	236	119	16	295	0	1,943	5.32
2007	1,210	229	123	17	299	1	1,879	5.15
2008	1,160	228	123	14	277	21	1,824	5.00
2009	1,233	230	124	16	287	24	1,913	5.24
2010	1,120	207	135	16	248	28	1,755	4.81
2011	1,073	197	141	16	237	31	1,695	4.64
2012	1,123	199	151	15	257	22	1,767	4.84
2013	1,157	198	160	15	274	21	1,824	5.00
Percent of 2013 Total	**63%**	**11%**	**9%**	**1%**	**15%**	**1%**	**100%**	**--**

Source: District billing records.

Per Capita Consumption

Table 5-9 identifies the total residential water consumption, total population, and the average daily water consumption per capita. During the previous eight years, the average water consumption was 63.8 gallons per day per capita (gpcd).

TABLE 5-9

Historical Residential Per Capita Water Consumption

Year	Total Residential Water Use (MG)	Population	Average Daily Residential Water Consumption per Capita (gpcd)
2006	1,648	64,946	69.5
2007	1,579	65,118	66.5
2008	1,526	65,289	63.9
2009	1,602	65,460	67.1
2010	1,479	65,632	61.7
2011	1,427	66,327	58.9
2012	1,488	67,022	60.7
2013	1,529	67,717	61.9
Average	**1,535**	**65,939**	**63.8**

Per Employee Consumption

Table 5-10 identifies the total non-residential water consumption, total employment of the businesses that make up the non-residential customers, and the average daily water

consumption per employee. During the previous 8 years, the average employee water consumption was 44.6 gallons per day per employee (gped).

TABLE 5-10

Historical Per Employee Water Consumption

Year	Total Non-Residential Water Use (MG)	Employment	Average Daily Water Consumption per Employee (gped)
2006	295	16,114	50.1
2007	299	16,210	50.5
2008	277	16,305	46.4
2009	287	16,401	47.9
2010	248	16,496	41.2
2011	237	16,934	38.3
2012	257	17,371	40.5
2013	274	17,808	42.2
Average	**272**	**16,705**	**44.6**

Distribution System Leakage

Distribution System Leakage (DSL) is all unauthorized uses, water system leakage, and any authorized uses the water system does not track (WAC 246-290-820(2)). Typical DSL sources include any water loss due to leaks, unauthorized uses such as illegal service connections, accounting errors, inaccurate source and customer meters, and water leaving the system for unmetered and/or unestimated usage such as flushing of water mains, fire flows, and use by unmetered services.

DSL for the District is the difference between the amount of water purchased from SPU through the master meters and the metered consumption by the customers of the District. Table 5-11 provides the historical DSL for 2006 through 2013. As shown in Table 5-11, the District has a relatively low percentage of DSL.

The District's DSL has ranged from a high of 8 percent in 2011 to a low of 0.1 percent in 2008. If the three year rolling average is below the 10 percent threshold established by WAC 246-290-820(1)(b)(i), then the water system is in compliance with DOH's water use efficiency rule and does not need to create a water loss control action plan. From 2011 to 2013 the 3-year rolling average is 4.5 percent so the water system is below the threshold and in compliance.

The District's DSL is low compared to many other systems. During the previous 8 years the District has put efforts into reducing DSL by fixing known leaks and replacing old water mains.

TABLE 5-11

Distribution System Leakage

Year	Total Master Meter Flow[(1)] (MG)	Total Metered Consumption[(2)] (MG)	DSL		
			(MG)	Annual (%)	3-Year Average (%)
2006	1,935	1,943	-7.27	0	-
2007	1,912	1,879	32.8	1.7%	-
2008	1,826	1,824	2.08	0.1%	0.6%
2009	1,926	1,913	12.5	0.7%	0.8%
2010	1,791	1,755	35.9	2.0%	0.9%
2011	1,843	1,695	148	8.1%	3.6%
2012	1,833	1,767	66.6	3.6%	4.6%
2013	1,860	1,824	35.8	1.9%	4.5%

(1) Total Master Meter Flow from Table 5-3.
(2) Total Metered Consumption from Table 5-8.

EQUIVALENT RESIDENTIAL UNITS

The conversion of total water use to equivalent residential units (ERUs) provides a way to express water use by non-residential and multi-family residential customers as an equivalent number of single-family residential customers. The average volume of water used per residential connection is calculated by dividing the total volume of water used in the single-family residential customer class by the total number of single-family residential connections. The ERU value defines the average single-family residential water use per connection. The volume of water used by the other customer classes can then be converted to an equivalent number of single-family residential services. ERUs for other customer classes are calculated by dividing the total consumption for other customer classes by the average single-family residential water use per connection.

The ERU value varies each year depending on the consumption patterns of the single-family customer class. Table 5-12 provides the number of single-family residential connections, single-family consumption, and the ERU value for the years 2006 through 2013. During this period, the average ERU value was 174 gpd, a value that will be used to project future ERUs.

TABLE 5-12

Historical Equivalent Residential Unit Value

Year	No. of Single-Family Residential Connections[(1)]	Total Single-Family Residential Consumption[(2)] (MG)	ERU Value (gpd/ERU)
2006	17,963	1,277	195
2007	18,068	1,210	183
2008	18,189	1,160	174
2009	18,295	1,233	185
2010	18,444	1,120	166
2011	18,558	1,073	158
2012	18,715	1,123	164
2013	18,915	1,157	168
Average	**18,393**	**1,169**	**174**

(1) Number of Single-Family Residential Connections from Table 5-1.
(2) Total Single-Family Residential Consumption from Table 5-8.

The ERU values in Table 5-12 are derived from consumption data and do not include DSL.

Table 5-13 identifies the number of ERUs for each customer class and the total number of ERUs. As of the end of 2013, the District provides water service to 28,088 ERUs.

TABLE 5-13

Historical Consumption Equivalent Residential Units by Customer Class

Year	ERU Value (gpd/ERU)[1]	Single-Family Residential [2]	Multi-Family Residential		Mobile Home Park	Non- Residential	Other Purveyors	Total ERUs
			Apartment & Duplex	Condominium				
2006	195	17,963	3,321	1,680	222	3,641	0	26,826
2007	183	18,068	3,426	1,843	247	3,315	15	26,898
2008	174	18,189	3,578	1,926	223	3,393	336	27,309
2009	185	18,295	3,409	1,840	233	3,369	357	27,145
2010	166	18,444	3,414	2,230	267	2,544	460	26,899
2011	158	18,558	3,400	2,447	270	2,402	540	27,076
2012	164	18,715	3,311	2,519	246	2,862	361	27,653
2013	168	18,915	3,233	2,609	243	3,088	344	28,088

(1) ERU value from Table 5-12.
(2) Total Single-Family Residential Connections from Table 5-1.

WATER USE FORECASTING

The following sections provide 20-year forecasts of ERUs, average day demands, and peak demands. These projections are based on the anticipated growth within the water service area and the historical water usage patterns presented in this Chapter. These demand forecasts will be used as the basis for evaluating the capacity of the system.

PROJECTED EQUIVALENT RESIDENTIAL UNITS (ERUS)

Table 5-14 provides the population and employment projections, the equivalent ERUs and the total ERUs for the service area. The annual growth rates used are based on the Puget Sound Regional Council's (PSRC) population and employment forecasts for the water service area. DSL is projected to remain at 4.5 percent of the total master meter flow. Projections presented in this Chapter do not assume any additional conservation savings. The District's conservation program, presented in Chapter 9, identifies water saving measures that will reduce the total system demands. The District's water system is projected to expand from 28,088 ERUs in 2013 to 39,927 in 2035.

Employment is expected to grow at a faster rate than the residential population. The projected ERUs for the 20-year planning period are based on the average per capita residential water consumption (63.8 gpcd), the average per employee water consumption (44.6 gped), and the average ERU value (174 gpd/ERU). The PSRC does not provide employment projections for the TAZ zones inside the water service area beyond 2035. The employee buildout number is assumed to be the projection at 2035. Using these assumptions, a total of 46,752 ERUs are projected at buildout.

TABLE 5-14

Water Service Area ERU Projections

	Residential[2]			Employee			
Year	Population[1]	Annual Growth	ERUs[3]	Population[1]	Annual Growth	ERUs[4]	Total ERUs
2014	71,084	1.96%	25,838	18,774	3.13%	4,785	30,624
2015	72,010	1.30%	26,175	19,343	3.03%	4,930	31,105
2016	72,936	1.29%	26,512	19,913	2.94%	5,075	31,587
2017	73,863	1.27%	26,848	20,482	2.86%	5,221	32,069
2018	74,789	1.25%	27,185	21,052	2.78%	5,366	32,551
2019	75,715	1.24%	27,522	21,621	2.71%	5,511	33,033
2020	76,641	1.22%	27,858	22,191	2.63%	5,656	33,515
2021	77,567	1.21%	28,195	22,760	2.57%	5,801	33,996
2022	78,494	1.19%	28,532	23,330	2.50%	5,946	34,478
2023	79,420	1.18%	28,868	23,899	2.44%	6,092	34,960
2024	80,346	1.17%	29,205	24,469	2.38%	6,237	35,442
2025	81,107	0.95%	29,482	24,986	2.11%	6,368	35,850

TABLE 5-14 – (continued)

Water Service Area ERU Projections

Year	Residential[2]			Employee			Total ERUs
	Population[1]	Annual Growth	ERUs[3]	Population[1]	Annual Growth	ERUs[4]	
2026	81,869	0.94%	29,759	25,503	2.07%	6,500	36,259
2027	82,630	0.93%	30,035	26,019	2.03%	6,632	36,667
2028	83,391	0.92%	30,312	26,536	1.99%	6,764	37,076
2029	84,153	0.91%	30,589	27,053	1.95%	6,895	37,484
2030	84,914	0.90%	30,865	27,570	1.91%	7,027	37,893
2031	85,675	0.90%	31,142	28,087	1.87%	7,159	38,301
2032	86,437	0.89%	31,419	28,604	1.84%	7,291	38,710
2033	87,198	0.88%	31,696	29,121	1.81%	7,422	39,118
2034	87,959	0.87%	31,972	29,638	1.77%	7,554	39,527
Buildout[5]	107,480	--	39,068	30,149	--	7,684	46,752

(1) Per PSRC.
(2) Residential is a combination of single family and multi-family customers as defined in table 5-8.
(3) Based on 63.8 gpcd and 174 gpd/ERU.
(4) Based on 44.6 gped and 174gpd/ERU.
(5) Buildout projections are explained in Chapter 3.

PROJECTED AVERAGE DAY DEMAND

The average ERU value (174 gpd/ERU) is used with the total projected ERUs to calculate the projected consumption. The 3 year rolling average of DSL is assumed to be a constant percent of water production throughout the 20 year projection period. The resulting average day demand is the sum of the projected consumption and DSL. Using these assumptions, average day demand is projected to be 7.197 mgd by 2034 and 8.513 at buildout.

TABLE 5-15

Water Service Area Average Day Demand Projections

Year	Total Consumption ERUs[1]	Projected Consumption[2] (gpd)	DSL		Average Day Demand (gpd)
			Percent	Total (gpd)	
2014	30,624	5,334,000	4.5%	242,000	5,576,000
2015	31,105	5,418,000	4.5%	246,000	5,664,000
2016	31,587	5,502,000	4.5%	250,000	5,752,000
2017	32,069	5,586,000	4.5%	253,000	5,839,000
2018	32,551	5,670,000	4.5%	257,000	5,927,000
2019	33,033	5,754,000	4.5%	261,000	6,015,000
2020	33,515	5,838,000	4.5%	265,000	6,103,000

TABLE 5-15 – (continued)

Water Service Area Average Day Demand Projections

Year	Total Consumption ERUs[(1)]	Projected Consumption[(2)] (gpd)	DSL		Average Day Demand (gpd)
			Percent	Total (gpd)	
2021	33,996	5,922,000	4.5%	269,000	6,191,000
2022	34,478	6,006,000	4.5%	272,000	6,278,000
2023	34,960	6,090,000	4.5%	276,000	6,366,000
2024	35,442	6,173,000	4.5%	280,000	6,453,000
2025	35,850	6,245,000	4.5%	283,000	6,528,000
2026	36,259	6,316,000	4.5%	286,000	6,602,000
2027	36,667	6,387,000	4.5%	290,000	6,677,000
2028	37,076	6,458,000	4.5%	293,000	6,751,000
2029	37,484	6,529,000	4.5%	296,000	6,825,000
2030	37,893	6,600,000	4.5%	299,000	6,899,000
2031	38,301	6,672,000	4.5%	303,000	6,975,000
2032	38,710	6,743,000	4.5%	306,000	7,049,000
2033	39,118	6,814,000	4.5%	309,000	7,123,000
2034	39,527	6,885,000	4.5%	312,000	7,197,000
Buildout[(3)]	46,752	8,144,000	4.5%	369,000	8,513,000

(1) Total ERUs calculated in Table 5-14.
(2) Projected consumption based on the ERU value of 174 gpd/ERU.
(3) Buildout projections are explained in Chapter 3.

PROJECTED PEAK DEMANDS

Table 5-16 provides projections for the average day, maximum day, and peak hour demand. Maximum day demands are equal to 2.0 times the average day demands and peak hour demands are equal to 2.0 times the maximum day demand flow rate as discussed previously in this Chapter. Maximum month average day demand (MMAD) is estimated to equal 1.57 times the average day demand, and peak season demand is estimated to equal 1.30 times the average day demand.

TABLE 5-16

Water Service Area Peak Demand Projections

Year	Average Day Demand, ADD[(1)] (mgd)	Maximum Day Demand, MDD[(2)] (mgd)	Peak Hour Demand, PHD[(3)] (gpm)	Peak Month Demand[(4)] (mgd)	Peak Season Demand[(5)] (gpm)
2014	5,576,000	11,152,000	15,490	8,754,000	5,030
2015	5,664,000	11,328,000	15,730	8,892,000	5,110
2016	5,752,000	11,504,000	15,980	9,031,000	5,190
2017	5,839,000	11,678,000	16,220	9,167,000	5,270
2018	5,927,000	11,854,000	16,460	9,305,000	5,350
2019	6,015,000	12,030,000	16,710	9,444,000	5,430
2020	6,103,000	12,206,000	16,950	9,582,000	5,510
2021	6,191,000	12,382,000	17,200	9,720,000	5,590
2022	6,278,000	12,556,000	17,440	9,856,000	5,670
2023	6,366,000	12,732,000	17,680	9,995,000	5,750
2024	6,453,000	12,906,000	17,930	10,131,000	5,830
2025	6,528,000	13,056,000	18,130	10,249,000	5,890
2026	6,602,000	13,204,000	18,340	10,365,000	5,960
2027	6,677,000	13,354,000	18,550	10,483,000	6,030
2028	6,751,000	13,502,000	18,750	10,599,000	6,090
2029	6,825,000	13,650,000	18,960	10,715,000	6,160
2030	6,899,000	13,798,000	19,160	10,831,000	6,230
2031	6,975,000	13,950,000	19,380	10,951,000	6,300
2032	7,049,000	14,098,000	19,580	11,067,000	6,360
2033	7,123,000	14,246,000	19,790	11,183,000	6,430
2034	7,197,000	14,394,000	19,990	11,299,000	6,500
Buildout[(6)]	8,513,000	17,026,000	23,650	13,365,000	7,690

(1) Average day demand from Table 5-15.
(2) Maximum day demand equals 2.0 times the average day demand. See Table 5-6.
(3) Peak hour demand equals 2.0 times the maximum day demand. See Table 5-7.
(4) Maximum month demand equals 1.57 times the average day demand. See Table 5-5.
(5) Peak season demand equals 1.30 times the average day demand. See Table 5-5.
(6) Buildout projections are explained in Chapter 3.