Water Demands

4

INTRODUCTION

A detailed analysis of water system demands is crucial to the planning efforts of a water supplier. A demand analysis first identifies current demands to determine if the existing system can effectively provide an adequate quantity of water to its customers under the most crucial conditions, in accordance with federal and state laws. A future demand analysis identifies projected demands to determine how much water will be needed to satisfy future growth of the water system and continue to meet federal and state laws.

Demands on the water system determine the size of storage reservoirs, supply facilities, water mains, and treatment facilities. Several different types of demands were analyzed and are addressed in this chapter, including average day demand (ADD), peak day demand (PDD), peak hour demand (PHD), fire flow demand, future demands, and a water use efficiency demand reduction forecast.

The magnitude of water demands is typically based on three main factors: 1) population, 2) weather, and 3) water use classification. Population and weather have the two largest impacts on water system demands. Population growth has a tendency to increase the annual demand; whereas, high temperature has a tendency to increase the demand over a short period of time. Population does not solely determine demand, because different populations use varying amounts of water. The use varies based on the number of users in each type of customer class, land use density, and irrigation practices. Water conservation efforts will also impact demands and can be used to accommodate a portion of system growth without increasing a system's supply capacity.

Certificate of Water Availability

In accordance with the requirements of the Growth Management Act (GMA), the Town of Eatonville (Town) must identify that water is available prior to issuing a building permit. A "Certificate of Water Availability" (CWA) is issued if there is sufficient water supply to meet the domestic water service and fire flow requirements of the proposed building. The requirement for providing evidence of an adequate water supply was codified in 1990 under Title 19.27.097 of the Revised Code of Washington (RCW) in the Building Code Section. To assist governments with implementing these requirements, the Department of Health (DOH) has developed a handbook titled *Guidelines for Determining Water Availability for New Buildings*.

CURRENT POPULATION AND SERVICE CONNECTIONS

Residential Population Served

The population within the Town limits was 2,775 in 2011. The Town serves water to approximately 21 customer connections outside of the Town limits along Eatonville Highway and near the intersection of Hilligoss Lane and 428th Street East. At approximately 2.78 people per residence, an estimated 60 additional people are served outside of the Town limits.

In 2011, the Town provided water service to an average of 1,036 customer accounts, of which approximately 870 or 84 percent of these accounts were single-family residential customers, 160 accounts or 15 percent were multi-family residential, schools, commercial and other customers, and 6 accounts or 1 percent were fire hydrants and fire sprinklers.

Water Use Classifications

The Town has divided all water customers into categories based on water meter size and customer class for billing purposes. For planning purposes, the water customers have been distributed into three different groups – single-family residential; multi-family residential, schools, commercial and other; and fire sprinklers and fire hydrants. The demand analysis that follows will report on the water use patterns of these three user groups.

EXISTING WATER DEMANDS

Water Consumption

Water consumption is the amount of water used by all customers of the system, as measured by the customers' meters. **Table 4-1** shows the historical average number of connections, average annual consumption, and average daily consumption per connection of each customer class for the Town from 2008 through 2011. Data between 2004 and 2007 was unavailable due to a new billing system that was introduced in mid-2007.

As shown in **Chart 4-1**, the single-family residential class represents approximately 84 percent of all connections, but only 70 percent of total system consumption, as shown in **Chart 4-2**. This is due to the lower consumption per connection of the single-family residential customers as compared to the other customers. As shown in **Table 4-1,** the single-family residential customers use an average of approximately 177 gallons per day (gpd) per connection, compared to the multi-family, school, commercial and other customers that use an average of approximately 407 gpd per connection, and the fire sprinkler and fire hydrant customers that only use water occasionally. The higher consumption of non-single family customers is expected, since these customers include multi-family residential customers where one connection typically serves several units, and commercial customers that include the system's highest individual water users.

Table 4-1
Average Annual Metered Consumption and Service Connections

Year	Customer Class: Single Family	Customer Class: Multi-Family, Schools, Commercial, Other	Customer Class: Fire Sprinklers, Hydrants	Totals
Average Number of Connections				
2008	865	161	6	1,032
2009	881	156	6	1,043
2010	874	157	6	1,037
2011	870	160	6	1,036
Average Annual Consumption (1000 gals)				
2008	60,488	25,120	0	85,608
2009	66,269	25,098	0	91,367
2010	58,970	23,226	0	82,196
2011	56,290	23,743	0	80,034
Average Daily Consumption Per Connection (gal/day/conn)				
2008	192	428	0	
2009	206	441	0	
2010	185	406	0	
2011	177	407	0	

The general decline in average annual consumption from 2008 to 2011 for all customer classes is shown in **Table 4-1**. In 2011, the single-family residential customers used an average of 8 percent less water than in 2008. The customer class consisting of multi-family residential, schools, commercial and other users also shows a decreasing trend in water consumption per connection. The decline in consumption is likely due to the Town's water use efficiency efforts.

Chart 4-1
2011 Water Connections by Customer Class

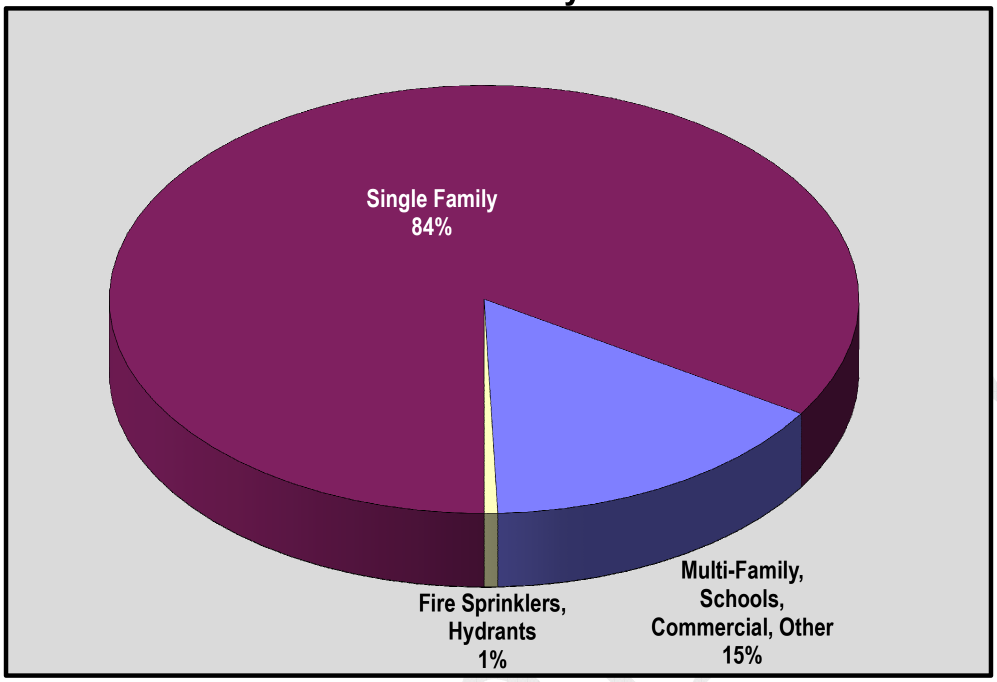


Chart 4-2
2011 Water Consumption by Customer Class

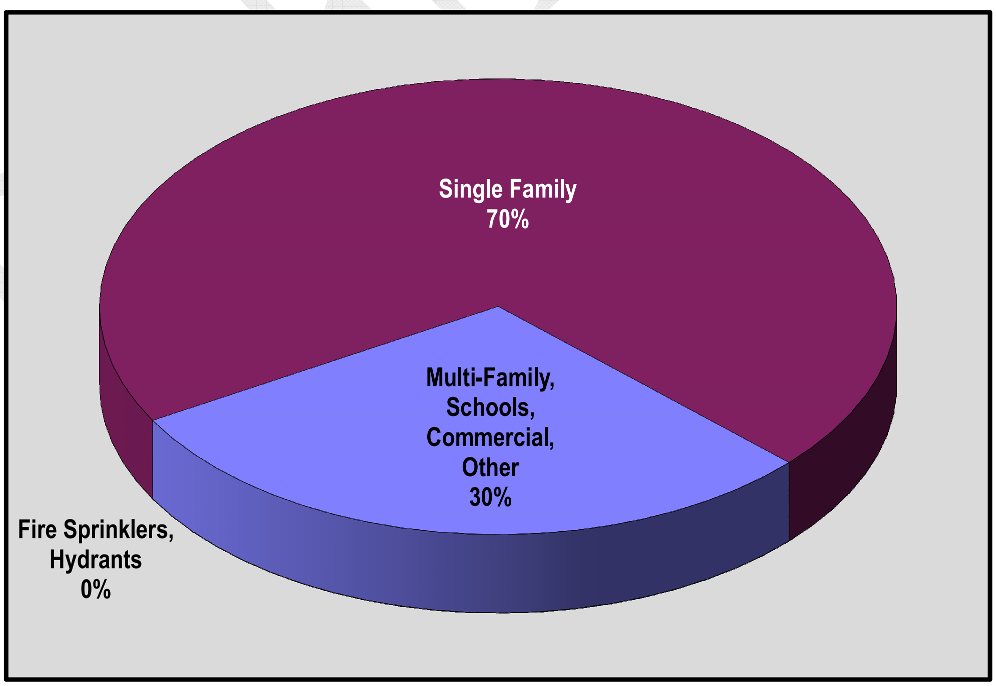


Table 4-2 shows the largest water users of the system in 2010 and their total amount of metered consumption for the year. The total water consumption of these 11 water accounts represented approximately 15 percent of the system's total consumption in 2010. The list of accounts in the table consists of schools, multi-family residences, commercial facilities, the sewer treatment plant, and a church. In 2011 a leak was found at Keybank, the fourth largest water user in 2011. The fix was repaired in 2011 and Keybank is no longer one of the largest water users in the system.

Table 4-2
2010 Largest Water Users

Name	Address	Yearly Consumption (gals)
Eatonville School District Irrigation	209 Washington Ave N	3,423,969
Town of Eatonville Sewer Plant	370 Mashell Ave S	2,140,000
Nybo Redi Mix Concrete	675 Center St E	1,091,900
Keybank	101 Center St W	922,610
Eatonville School District Sprinkler	302 Mashell Ave N	859,800
Eatonville School District Gym	302 Mashell Ave N	828,100
Malcom's Laundromat	320 Center St E #A4	735,850
Glacier Village Apartments	212 Glacier Ave N	707,000
Daka Inc. Apartments	206 Carter St E	633,300
Westwood (John Hightower)	815 Eatonville Hwy W	624,830
Eatonville Baptist Church	825 Eatonville Hwy W	618,500
Largest Water Users Total		12,585,859
Water System Total		82,195,951
Percent of Total		15%

Demand for residential and commercial customers varies throughout the year, typically peaking in the hot summer months. Residential and commercial customers often peak at different times or have different peaking factors because their uses differ. The demand for single-family residential customers in the Town generally peaks in August as shown in **Chart 4-3**. For the Town, the demand for the multi-family residential, schools, commercial and other customers also peaks in August, as shown in **Chart 4-4**. However, the peak month consumption versus average month consumption factor for multi-family residential, schools, commercial and other customers in the Town's water system is slightly higher than the peak month consumption versus average month consumption factor for single family residential customers, indicating that the non-single family class experiences slightly higher peaks than the single family class as indicated in **Chart 4-5**. The WUE Program in **Appendix F** will evaluate the potential water savings available from the customer classes with the higher peaking factor.

Chart 4-3
Historical Monthly Single-Family Consumption

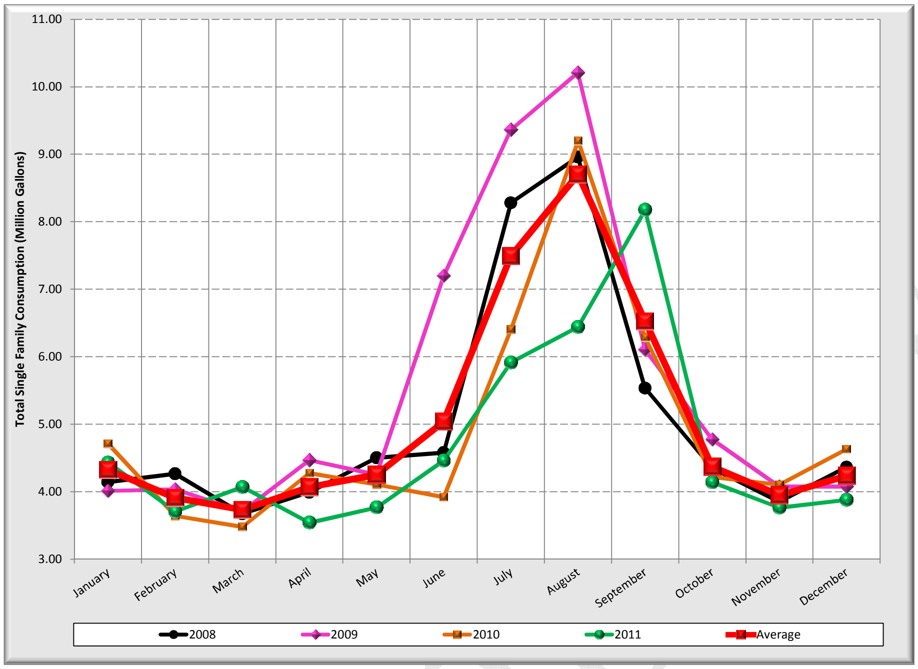


Chart 4-4
Historical Monthly Non-Single Family Consumption

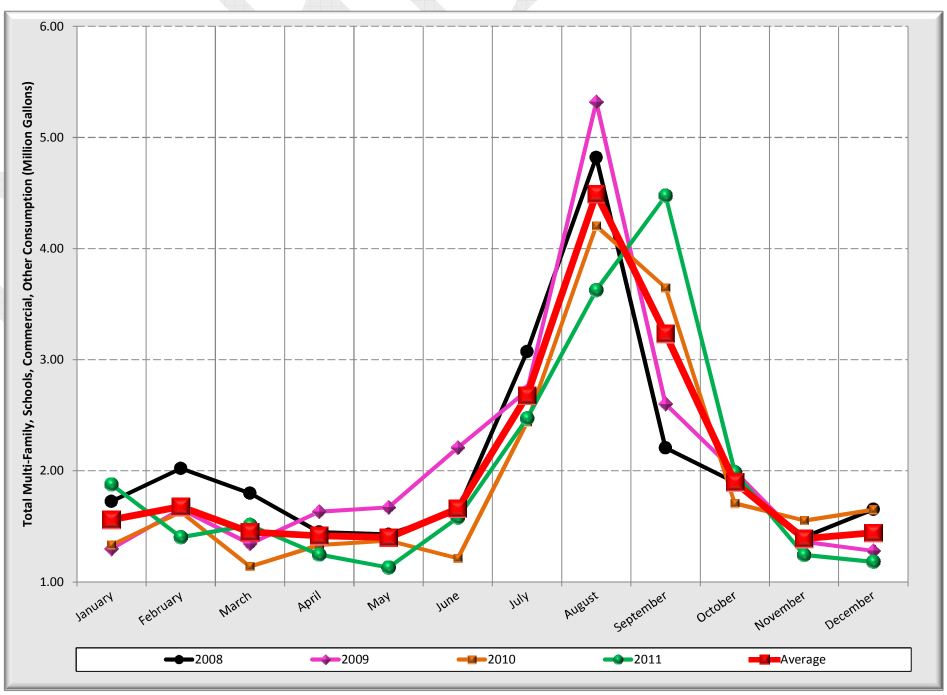
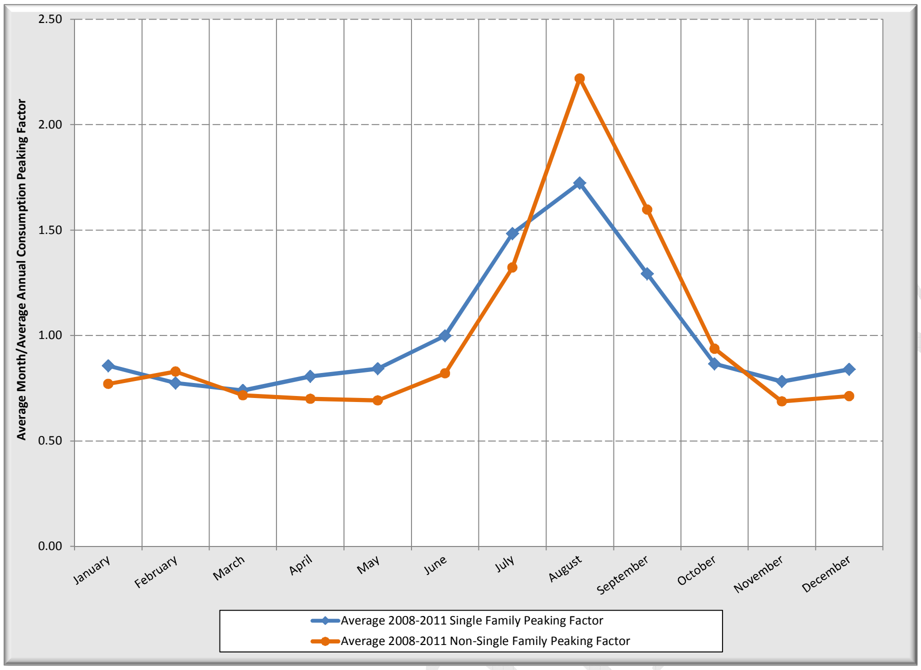


Chart 4-5
Average Monthly Peaking Factors by Customer Class



Water Supply

Water supply, or production, is the total amount of water supplied to the system, as measured by the meters at each supply source. Water supply is different than water consumption in that water supply is essentially the recorded amount of water put into the system, and water consumption is the recorded amount of water taken out of the system. The measured amount of water supply in any system is typically larger than the measured amount of water consumption, due to non-metered water use and water loss (i.e., distribution system leakage). **Table 4-3** summarizes the total amount of water supplied by the sources for 2004 through 2011 and the calculated ADD for each year.

Table 4-3
Historical Water Supply and System Demand

Year	Population in Town Limits	Population Outside Town	Total Population Served	Annual Supply (gal)	Average Daily Demand (gpm)	Average Demand Per Capita (gpd)
2004	2,310	60	2,370	106,102,043	202	123
2005	2,385	60	2,445	109,419,274	208	123
2006 [1]	2,460	60	2,520	126,053,920	240	137
2007	2,534	60	2,594	164,323,600	313	174
2008	2,609	60	2,669	126,539,000	241	130
2009	2,683	60	2,743	132,585,000	252	132
2010	2,758	60	2,818	132,098,000	251	128
2011	2,775	60	2,835	123,773,000	235	120
Average 2008 - 2011						128

1 = River supply data is missing for 2006 and the annual supply quantity is lower than the actual amount supplied.

In general, the Town experienced a trend of increasing water supply, or system-wide water demand between 2004 and 2007, as shown in **Table 4-3**, due to system-wide growth and the associated increase in water usage. The decline between 2007 and 2011 is likely due to water use efficiency practices, the replacement of old water mains, and the repair of water main leaks to decrease water supply. The ADD has remained relatively steady for the last 4 years.

Table 4-3 also presents the computation of the demand per capita for 2004 through 2011. Although the average demand per capita has fluctuated, the average demand per capita for the last 4 years is 128 gpd, which is a 16 percent reduction from the average demand per capita of 153 gpd per capita reported in the previous Water System Plan (WSP). The average per capita demand is used later in this chapter to forecast water demands in future years, based on future population estimates.

Table 4-4 shows the average demand of each of the Town's pressure zones, based on 2011 master meter data. The master meter supply data in Table 4-4 was used for the existing demands in the hydraulic model. The total master meter supply data in **Table 4-4** is less than the annual supply in **Table 4-3** due to water usage for treatment purposes and potential leakage between the sources of supply and the master meter, which will be discussed later in this chapter.

Like most other water systems, the Town's water supply varies seasonally. **Chart 4-6** shows the historical amount of water supplied by the Town's sources for each month from 2008 to 2011. As shown in **Chart 4-6**, water supply increases significantly during summer months, primarily due to lawn watering. The Town's highest water use typically occurs in July and August. Water production from the Mashel River is added to the system to meet the additional demand during these peak periods, as shown in **Chart 4-7**.

Table 4-4
2011 Demands by Pressure Zone

Pressure Zone	2011 Master Meter Supply (gallons)	Average Daily Demand (gpm)	Percent of Total Demand (%)
996	81,269,325	155	84.9%
1050	10,270,357	20	10.7%
1077	4,173,318	8	4.4%
Total	95,713,000	182	100%

Chart 4-6
Historical Monthly Water Supply

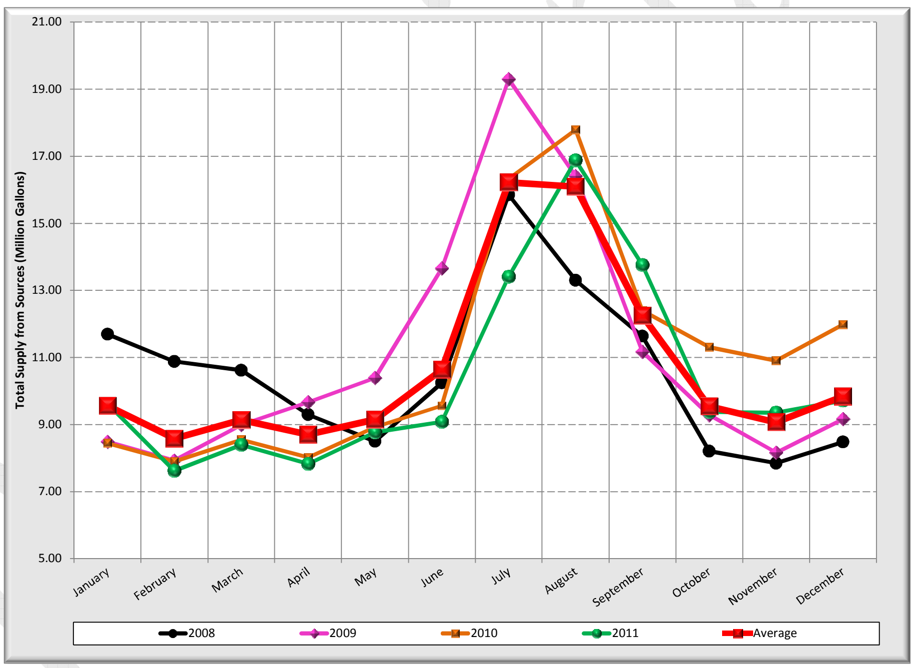
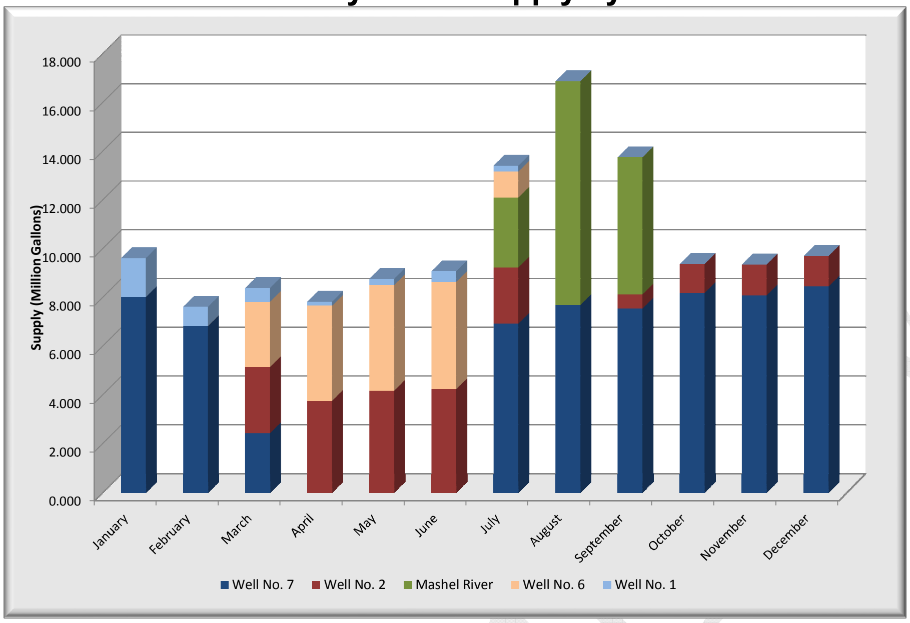


Chart 4-7
2011 Monthly Water Supply by Source



Distribution System Leakage

The difference between the amount of water supply and water consumption is the amount of distribution system leakage (DSL). The amount of DSL in a water system is calculated as the difference between the amount of water supply and the amount of authorized water consumption. There are many sources of DSL in a typical water system, including water system leaks; inaccurate supply metering; inaccurate customer metering; illegal water system connections or water use; fire hydrant usage; water main flushing; and well backwash and malfunctioning telemetry and control equipment resulting in reservoir overflows. Several of these types of usages, such as water main flushing, fire hydrant usage, and well backwash, may be considered authorized uses if they are tracked and estimated. Although real losses from the distribution system, such as reservoir overflows and leaking water mains, should be tracked for accounting purposes, these losses must be considered leakage. The Water Use Efficiency (WUE) Rule, which became effective in 2007, established a DSL standard of 10 percent of less based on a 3 year average.

Table 4-5 reports the total system leakage and the distribution system leakage for 2008 through 2011. Total system leakage is based on the difference between the amount of water supplied by the sources and the total authorized consumption. The rolling 3-year average for total system leakage in 2011 was approximately 31 percent. Distribution system leakage is based on the difference between the amount supplied by the master meter after the supply water is treated and the total authorized consumption after the master meter. The rolling 3-year average for DSL in 2011 was approximately 16 percent.

The total supply production and the total master meter supply differ by approximately 28 million gallons (MG) per year resulting in the two different leakage rates. Approximately 4.5 MG of the

28 MG is authorized consumption utilized in the treatment process for backwash, filter cleaning, and water quality testing. A portion of the leakage at the water treatment plant (WTP) site is due to known clear well leaks. The Town plans to further investigate the clear well leakage and locate any on-site leakage as a capital improvement project, which is identified in **Chapter 9**. The total production and total system leakage will be utilized for projecting demands and water system analyses.

Table 4-5
Distribution System Leakage

	2008	2009	2010	2011
Authorized Consumption (AC)				
Metered Customer Use (1,000 gal)	85,608	91,367	82,196	80,034
Construction/Hydrant Meter Use (1,000 gal)	102	102	16	322
Fire Department Usage (1,000 gal)	241	79	126	93
Hydroseeding (1,000 gal)	7	1	2	0
Flushing (1,000 gal)	20	174	0	0
Treatment Plant Water Usage (1,000 gal)	4,563	4,563	4,563	4,563
Total Authorized Consumption (1,000 gal)	90,541	96,284	86,902	85,010
Total Production (TP)				
Total Production (1,000 gal)	126,539	132,585	132,098	123,773
Total System Leakage (TP - AC)				
Total System Leakage (1,000 gal)	35,998	36,301	45,196	38,763
Total System Leakage (%)	28.4%	27.4%	34.2%	31.3%
Rolling 3-Year Average DSL (%)	28%	28%	30%	31%
Total Master Meter Supply (TMM)				
Total Master Meter Supply (1,000 gal)	103,892	105,346	102,055	95,713
Distribution System Leakage (TMM - AC) [1]				
Total Distribution System Leakage (1,000 gal)	17,914	13,625	19,715	15,265
Total Distribution System Leakage (%)	17.2%	12.9%	19.3%	15.9%
Rolling 3-Year Average DSL (%)	17%	15%	16%	16%

1 = AC in the DSL equation does not include "treatment plant water usage" since the water is utilized prior to the master meter.

The amount of DSL in the Town's distribution system has been as low as 12.9 percent in 2009 and as high as 19.3 percent in 2010. Although earlier years are not shown in **Table 4-5**, the Town experienced DSL as high as 26 percent in 2007. Thus, the Town has managed to decrease DSL in the system by repairing water main leaks and reducing the usage of non-metered water for construction projects. The DSL percentage is utilized for compliance with the WUE requirements.

The Town plans to decrease the amount of DSL by performing more leak detection on its system and repairing the leaks found to reduce the amount of water lost. The Town will continue to record the water used for construction, flushing, and fire department uses. The Town will also implement the WUE Program contained in **Appendix F**.

Equivalent Residential Units

The demand of each customer class can be expressed in terms of equivalent residential units (ERU's) for demand forecasting and planning purposes. One ERU is equivalent to the amount of water used by a single-family residence. The number of ERU's represented by the demand of the other customer classes is determined from the total demand of the customer class and the unit demand per ERU from the single-family residential demand data.

Table 4-6 presents the computed number of ERU's for each customer class for 2008 through 2011 for the Town's service area. The demands shown are based on supply data that was computed from the consumption of each class and the average amount of total system DSL from each year. The demand per ERU for 2011 was 274 gpd. This lies in the typical range of between 250 and 300 gpd for single-family demand in the Puget Sound area.

Table 4-6
Equivalent Residential Units (ERU's)

Year	Average Number of Connections	Average Annual Demand (gallons)	Demand per ERU (gal/day/ERU)	Total ERU's
Single Family Residential (ERU Basis)				
2008	865	89,408,312	283	865
2009	881	96,164,349	299	881
2010	874	94,770,817	297	874
2011	870	87,053,778	274	870
Multi-Family Residential, Schools, Commercial, Other				
2008	161	37,130,688	283	359
2009	156	36,420,651	299	334
2010	157	37,327,183	297	344
2011	160	36,719,222	274	367
Fire Sprinklers, Hydrants				
2008	6	0	283	0
2009	6	0	299	0
2010	6	0	297	0
2011	6	0	274	0
System-Wide Totals				
2008	1,032	126,539,000	283	1,225
2009	1,043	132,585,000	299	1,215
2010	1,037	132,098,000	297	1,218
2011	1,036	123,773,000	274	1,237

Average Day Demand

Average Day Demand (ADD) is the total amount of water delivered to the system in a year divided by the number of days in the year. The ADD is determined from historical water use patterns of the system and can be used to project future demand within the system. ADD data is typically used to determine standby storage requirements for water systems. Standby storage is the volume of a reservoir used to provide water supply under emergency conditions when supply facilities are out of service. Water production records from the Town's sources were reviewed to determine the system's ADD. The system's ADD from 2004 through 2011 is shown in **Table 4-3**.

Peak Day Demand

Peak Day Demand (PDD) is the maximum amount of water used throughout the system during a 24-hour time period of a given year. PDD typically occurs on a hot summer day when lawn watering is occurring throughout much of the system. In accordance with *WAC 246-290-230 - Distribution Systems*, the distribution system shall provide fire flow at a minimum pressure of 20 psi during maximum day demand (i.e., peak day demand) conditions. Supply facilities (wells, springs, pump stations, interties) are typically designed to supply water at a rate that is equal to or greater than the system's PDD.

The PDD is typically determined from the combined flow of water into the system from all supply sources and reservoirs on the peak day. The Town's PDD likely occurred during the week of July 31, 2009 when the sources of supply experienced a peak supply rate of 587 gpm and temperatures approached 90 degrees Fahrenheit in the Town. While the Town's daily supply information is available for that week, the reservoir flow data is not available; therefore, the system's PDD could not be computed based on actual system data. Instead, a typical PDD/ADD factor for the Puget Sound region of 2.50 was applied to the system's actual ADD. This resulted in an estimated PDD of 631 gpm for the peak day in 2009 as shown in **Table 4-7**.

Peak Hour Demand

Peak Hour Demand (PHD) is the maximum amount of water used throughout the system, excluding fire flow, during a 1 hour time period of a given year. In accordance with *WAC 246-290-230 - Distribution Systems*, new public water systems or additions to existing systems shall be designed to provide domestic water at a minimum pressure of 30 psi during PHD conditions. Equalizing storage requirements are typically based on PHD data.

The PHD, like the PDD, is typically determined from the combined flow of water into the system from all supply sources and reservoirs. Hourly water production records and chart recordings of reservoir levels were not available for the Town's supply and storage facilities. Therefore, the system's PHD could not be computed based on actual system data. Instead, it was estimated by applying a typical PHD/PDD ratio of 1.80 to the system's estimated PDD amount. This resulted in an estimated PHD of 1,135 gpm for the peak hour as shown in **Table 4-8**.

Table 4-7 also shows the peaking factors of the water system based on the ADD, PDD, and PHD data presented above. The PDD/ADD ratio of 2.50 is within the typical range of 1.2 to 2.5 for most systems. The estimated PHD/PDD ratio of 1.8 is within the typical range of 1.3 to 2.0 for most systems. These peaking factors will be used later in this chapter in conjunction with projected ADD to project future PDDs and PHDs of the system.

Table 4-7
Peak Day Demands and Peaking Factors

Peak Day Demand Data		
Demand Type	**Date**	**Demand (gpm)**
Average Day Demand (ADD)	2009	252
Peak Day Demand (PDD)	Daily reservoir data unavailable Assumed PDD/ADD = 2.50	631
Peak Hour Demand (PHD)	Hourly data unavailable Assumed PHD/PDD = 1.80	1,135

Peaking Factors	
Peak Day Demand/Average Day Demand (PDD/ADD) (typ. value assumed)	2.50
Peak Hour Demand/Peak Day Demand (PHD/PDD) (typ. value assumed)	1.80
Peak Hour Demand/Average Day Demand (PHD/ADD)	4.50

Fire Flow Demand

Fire flow demand is the amount of water required during fire fighting as defined by applicable codes. Fire flow requirements are established for individual buildings and expressed in terms of flow rate (gpm) and flow duration (hours). Fighting fires imposes the greatest demand on the water system because a high rate of water must be supplied over a short period of time, requiring each component of the system to be properly sized and configured to operate at its optimal condition. Adequate storage and supply is useless if the transmission or distribution system cannot deliver water at the required rate and pressure necessary to extinguish a fire.

General fire flow requirements were established for the different land use categories to provide a target level of service for planning and sizing future water facilities in areas that are not fully developed. The general fire flow requirement for each land use category is shown in **Table 4-8**. The water system analyses presented in **Chapter 7** are based on an evaluation of the water system for providing sufficient fire flow in accordance with these general fire flow requirements. The fire flow requirements shown in the table do not necessarily equate to actual existing or future fire flow requirements for all buildings, since this is typically based on building size, construction type, and fire suppression systems provided. Improvements to increase the available fire flow to meet actual fire flow requirements greater than those shown in the table shall be the responsibility of the developer.

Table 4-8
General Fire Flow Requirements

Land Use Category	Fire Flow Requirement (gpm)	Flow Duration (hours)
Single Family Residential	1,000	2
Multi-Family Residential	2,500	2
Commercial/Business Park	2,500	3
Industrial/Airport	2,500	3
Schools	2,500	3

FUTURE WATER DEMANDS

Basis for Projecting Demands

Future demands were calculated from the results of the existing per capita demand computations shown in **Table 4-3** and the projected population data from **Chapter 3**. Future demand projections were computed with and without water savings expected from implementing WUE measures contained in the Town's WUE Program in **Appendix F**. The calculated future per capita demand of 128 gpd was used for all demand projections without savings from WUE measures. The per capita demand was reduced to reflect the WUE goals and used as the basis for future water demand projections with implementation of the WUE Program. The Town's WUE Program presents a goal to reduce the 4-year rolling average demand per capita by 6 percent by the year 2018 and by 8 percent by the year 2032.

Future demands for the hydraulic model were calculated from the results of the total master meter supply data shown in **Table 4-4**. Differences between the master meter supply and per capita demand is discussed earlier in this chapter.

Demand Forecasts and Conservation

Table 4-9 presents the 1-year, 2-year, 3-year, 4-year, 5-year, 6-year, and 20-year water demand forecasts for the Town's water system. The actual demand data from 2011 and the estimated demand for 2012 are also shown in the table for comparison purposes. The future ADDs were projected based on population estimates for the given years and the estimated demand per capita values. The future PDDs and PHDs shown were computed from the projected ADDs and the existing system peaking factors shown in **Table 4-7**. The future demand projections are also shown with and without estimated reductions in water use from achieving WUE goals.

The analysis and evaluation of the existing water system with proposed improvements, as presented in **Chapters 7** and **9**, is based on the 20-year projected demand data without WUE reductions. This ensures that the future system will be sized properly to meet all requirements, whether or not additional water use reductions are achieved. However, the Town will continue to pursue reductions in water use by implementing the WUE Program contained in **Appendix F** of this WSP.

Table 4-10 presents the existing and projected ERU's of the system. The 6-year and 20-year ERU forecast is based on the projected water demand data. The historical and projected water demand and ERU data from **Tables 4-9** and **4-10** are also shown graphically in **Chart 4-8**.

Table 4-9
Future Water Demand Projections

Description	2011 Actual [1]	2012 Projected	2013 Projected (+ 1 yrs)	2014 Projected (+ 2 yrs)	2015 Projected (+ 3 yrs)	2016 Projected (+ 4 yrs)	2017 Projected (+ 5 yrs)	2018 Projected (+ 6 yrs)	2019 Projected (+7 years)	2032 Projected (+ 20 yrs)
Population Data										
Population Served [2]	2,835	2,845	2,852	2,908	2,979	3,067	3,172	3,296	3,498	5,830
Increase from Base Year 2011		10	17	73	144	232	337	461	653	2,995
Demand Basis Data (gal/day/capita)										
Avg Day Demand without WUE	120	128	128	128	128	128	128	128	128	128
Avg Day Demand with WUE			127	125	124	123	122	120	120	118
Average Day Demand (gpm)										
Demand without WUE	235	253	254	258	265	273	282	293	311	518
Demand with WUE			251	253	257	262	268	275	292	477
Peak Day Demand (gpm)										
Demand without WUE	589	632	634	646	662	681	705	733	777	1,296
Demand with WUE			627	633	642	654	670	689	730	1,192
Peak Hour Demand (gpm)										
Demand without WUE	1,060	1,138	1,141	1,163	1,192	1,227	1,269	1,319	1,399	2,332
Demand with WUE			1,129	1,140	1,156	1,178	1,205	1,239	1,313	2,146

1 = 2011 Peak Day Demand and Peak Hour Demand values are based on the actual Average Day Demand amounts for the year and estimated peaking factors, and do not necessarily represent actual peak demands for this year.
2 = Population Served is the estimated Town population plus an estimated 60 customers outside of the Town limits.

Table 4-10
Future ERU Projections

Description	Actual 2011	Projected 2012	2013	2014	2015	2016	2017	2018	2019	2032
Demand Data (gpm)										
Avg Day Demand without WUE	235	253	254	258	265	273	282	293	311	518
ERU Basis Data (gal/day/ERU)										
Demand per ERU without WUE	274	289	289	289	289	289	289	289	289	289
Demand per ERU with WUE		288	285	283	280	277	274	271	271	265
Equivalent Residential Units (ERUs)										
Total System ERUs	1,237	1,259	1,262	1,287	1,318	1,357	1,404	1,459	1,548	2,580

Chart 4-8
Future Water Demand and ERU Projections