

## 5 WATER USE EFFICIENCY

Water is a precious, limited resource. How we use water affects all of us—our neighbors, businesses, farms, and the environment. In Washington state and elsewhere, growth in residential development, business, agriculture, and recreation has increased demand, and thus competition for water. In addition, dwindling salmon stocks and their listing under the Endangered Species Act have heightened concern about excessive water use and compliance with water resource laws. As the potential to develop new sources of water diminishes, efficient use of water is necessary to meet future demand.

The purpose of this chapter is to provide information on state-mandated conservation requirements for municipal water suppliers, the District's level of compliance with those requirements, the current water use efficiency program adopted by the District, and the water use efficiency program the District will implement from 2014 through 2019.

### 5.1 Regulatory Requirements and District Compliance

The following section discusses the regulatory requirements that the District must follow in relation to the Washington State Municipal Water Law, and the status of the District's compliance with each of the requirements.

#### 5.1.1 Regulatory Background

To address increasing demand on the state's water resources, the Washington State Legislature passed the Municipal Water Law (Second Engrossed Second Substitute House Bill 1338) in 2003. An elemental function of the law is to provide incentives for efficient use of water by municipal water suppliers and provide greater water right certainty and flexibility. Specifically, the law does the following:

- Clarifies where municipal water utilities can use existing water rights.
- Defines which water systems and suppliers are exempt from Washington's relinquishment statute.
- Establishes new water conservation standards for municipal utilities and those who use their water, and imposes a fee to fund those conservation activities.
- Requires consistency with land use plans and sets forth a duty to provide retail water service.
- Establishes criteria for changing or transferring municipal water rights.
- Allows use of water for environmental goals and pilot watershed agreements.

As part of implementing this bill, the Washington State Department of Health (DOH) was directed by the Legislature to adopt and administer an enforceable Water Use Efficiency Rule (WUER). The rule became effective in 2007 and established water use efficiency requirements that water suppliers must fulfill. Prior to the 2007 WUER requirements, the Office of Drinking Water, a division of DOH, used the 1994 publication *Conservation Planning Requirements* to convey to water purveyors how they should incorporate water use efficiency into their planning process. The *Water Use Efficiency Guidebook* (DOH 2011), now in its third edition, has replaced the 1994 document and describes the requirements outlined in the WUER. This Water System Plan and the conservation planning that preceded it comply with the WUER and the guidelines outlined in the 2011 *Water Use Efficiency Guidebook*.

### 5.1.2 Requirements and District Compliance Status

Potable water suppliers, their water system plans, and the conservation strategies contained therein are required to comply with the State of Washington WUER and the *Water Use Efficiency Guidebook*. The requirements involve both water system planning and operation. The Water Use Efficiency (WUE) requirements and associated compliance deadlines for Group A municipal water suppliers are listed in order by due date in Table 5-1.

**Table 5-1. Summary of Water Use Efficiency Requirements for Group A Municipal Water Suppliers**

Requirement	Compliance Deadline	WAC Section Reference	Compliance Status	Notes
Include WUE program in planning documents	January 22, 2008	246-290-810	Yes	—
Submit first annual WUE report	July 1, 2008	246-290-840	Yes	—
Submit service meter installation schedule	July 1, 2008	246-290-496	Yes	System fully metered
Set WUE goals	July 1, 2009	246-290-830	Yes	Adopted new 2014-2019 WUE Goals June 2013
Meet distribution leakage standard	July 1, 2010, or 3 years after installing all service meters	246-290-820	No	Expect compliance by 2014. Action plan in place.
Complete installation of all service meters	January 22, 2017	246-290-496	Yes	—

### **5.1.2.1 Water Use Efficiency Program**

As part of the planning requirements of the WUER, water purveyors must develop a Water Use Efficiency Program and include it in water system plans submitted to DOH after January 22, 2008. Per WAC 246-290-810, purveyors must describe the following elements in their Water Use Efficiency Program:

- The existing conservation program and how much water was saved over the last 6 years due to that program.
- Future program for the next 6 years (including an implementation schedule, budget, and funding mechanism).
- Projected water savings from selected conservation measures.
- Demand forecast that includes both a conservation implementation scenario and a no-conservation implementation scenario.
- Estimated leakage.
- How the purveyor will educate customers about efficiency practices.
- How the program will be evaluated for effectiveness.

### **5.1.2.2 Goal Setting and Performance Reporting**

As mentioned above, the WUER requires municipal water suppliers to establish WUE goals. These goals must be established through a public process and reported on annually to customers and DOH by July 1 of each year. The WUE goals established through a public process are for a 6-year period, and should be re-evaluated each cycle. Goals must be measurable, address water supply and demand forecasting, and include an implementation schedule for each goal.

Performance reports are required to be made available to the public on an annual basis and should include the purveyor's WUE goals, goal achievement status, total annual production, annual leakage volume and percent, and for systems not fully metered, status of meter installation and action taken to minimize leakage. Many purveyors fulfilled this requirement by including the performance report information in their annual Consumer Confidence Report.

### **5.1.2.3 Distribution Leakage Standard**

Prior to adoption of the Municipal Water Law, DOH did not have a set distribution leakage standard, but encouraged a figure of 20% or less. Under the WUER, municipal water suppliers must now meet a distribution system leakage rate of 10% or less of total production. Leakage must be presented both as a percentage and as leakage volume calculated using the mathematical formula defined in the WUER. Leakage is to be based on a rolling 3-year average. Compliance with the distribution leakage standard must be achieved by July 1, 2010; if unable to meet this standard, the supplier must

develop and implement a Water Loss Control Action Plan that outlines the steps and timelines to achieve the desired leakage rate.

## 5.2 Existing Water Use Efficiency Program

In January 2008, the District established measurable water saving goals for the 6-year period from 2008 through 2013 for both the supply- and demand-side of the District's distribution system. These goals were established through a public process as required by the Municipal Water Law. The goals provide a benchmark for achievement and play a significant role in defining the success of the District's Water Use Efficiency Program. To remain in synch with the update to the Water System Plan, the District re-established its 6-year WUE goals in 2013 for the 6-year period from 2014 through 2019.

The District's WUE goals and the measures taken to help meet those goals are described below.

### 5.2.1 Goals

The District's 2008–2013 Water Use Efficiency Program contained three goals, which included two demand-side goals and one supply-side goal. These three goals were as follows:

1. **Reduce consumption per Equivalent Residential Units from 178 gallons per service per day to 175 gallons per service per day.**

**Outcome:** Equivalent Residential Units are 160 gallons per service per day.

2. **Reduce the summer peak flows from 1.7 times Average Daily Demand to 1.6 times Average Daily Demand.**

**Outcome:** Summer peak flows are 1.7 times Average Daily Demand.

3. **Reduce distribution system leakage by 1%, from 7% to 6%.**

**Outcome:** After adjusting the method by which the distribution system leakage (DSL) was calculated, the DSL 3-year rolling average is 11.1%.

The District’s Water Use Efficiency Program consists of the WUE measures listed in Table 5-2.

**Table 5-2. Existing Water Use Efficiency Measures**

Measure	Sectors*			Implementation Year					
	SF	MF	NR	2008	2009	2010	2011	2012	2013
Public Outreach	x	x	x	x	x	x	x	x	x
Indoor Retrofit Kits	x	x	x	x					x
Shower Timers	x	x	n/a	x	x	x	x	x	x
School Outreach	x	x	x	x	x	x	x	x	x
Toilet Leak Kits	x	x	x	x	x	x	x	x	x
Soil Moisture Meters	x	x	x					x	x
Rain Barrel Program	x	x	x			x	x	x	x
System Leak Detection & Repair	x	x	x	x	x	x	x	x	x
Bill Showing Consumption History	x	x	x	x	x	x	x	x	x
Large Meter Testing	n/a	x	x	x	x	x	x	x	x

\*SF = Single-Family, MF = Multi-Family, NR = Non-Residential, n/a = Not Applicable

### 5.2.1.1 Public Outreach Program

Water conservation is the “beneficial reduction in water use, waste, and loss” and is proven to be the most economical and environmentally protective means of meeting the challenges of water supply management. Water conservation activities can help save water, save time, and save money year-round, not just in the summer. The main focus of the District’s public outreach program is to provide customers with simple behaviors they can adopt to reduce the amount of water they use. The District’s public outreach activities include staffed informational booths at local community events, workshops, school fairs, etc. At the events, District staff share ideas on how to identify and stop common leaks, conserve water, and use water more efficiently.

The District provides water saving tips in each issue of its bi-monthly *Pipeline* newsletter. Depending on the season, articles focus on indoor or outdoor aspects of the District’s Water Use Efficiency Program such as education programs, water saving devices, and gardening tips. The District also utilizes special publication advertising, the District’s website, and social media tools (Facebook and Twitter) to encourage customers to be water-wise.

As part of its community outreach and education strategy, the District also utilizes sponsorships as a way to create awareness and visibility around water use efficiency, conservation, and resource protection. These activities include the following:

- Organizer and major sponsor of the Skagit River Salmon Festival, which brings together other community agencies and organizations to create greater awareness of the need for protecting our watershed and conserving its resources.
- Community sponsoring partner for *Built Green*® workshops targeted to building professionals and homeowners focused on building sustainability issues, including water use efficiency.
- Skagit Watershed Letterbox Trail, a cross between geocaching and a scavenger hunt, is an activity targeted at families using hidden letterboxes to explore the natural wonders of Skagit County while learning how to help protect our watershed.
- Skagit Community Energy Challenge community partner programs that provide interested homeowners with a home energy assessment plus free assessments in water conservation, waste reduction, and creation of wildlife habitat.

#### **5.2.1.2 Indoor Retrofit Kits**

The District is a conservation partner with the U.S. Environmental Protection Agency's (EPA's) WaterSense program to help customers decrease indoor and outdoor water use through water-efficient products and simple water saving practices. The program encourages customers to look for WaterSense labeled products, which have been independently certified for efficiency and performance, and promotes water saving techniques that reduce stress on water systems and the environment. The kits were first available through the District in 2008, but were not heavily marketed. New kits were developed in 2012 and include one 1.5-gpm low-flow showerhead, plus a kitchen and bathroom aerator, which are available for sale at the main office for \$10.

#### **5.2.1.3 Shower Timers**

Standard showerheads use 2-1/2 gallons of water per minute; low-flow showerheads use less than 2 gallons. So, an average 8-minute shower uses 16 to 20 gallons of water. For every moment shaved off shower time, customers are saving water. By setting the timer to 5 minutes, customers can save 6 to 7-1/2 gallons of water per shower, which can significantly add up. The shower timer is one of the District's most popular give-away items at events. Since 2008, the District has handed out 2,250 5-minute shower timers.

#### **5.2.1.4 School Outreach**

Over the years, the District has offered school groups free tours of Judy Reservoir and the water treatment plant. In 2012, the District began piloting to elementary classrooms a program called *The Story of Drinking Water*—an exploration of water's role in our environment and society, with an emphasis on the importance of ensuring a safe and reliable water supply.

As part of the program, the District offers free to teachers *The Story of Drinking Water Teacher and Activity Guide*—a complete grade school curriculum on water. The teacher’s guide provides 33 activities covering the hydrologic cycle, forms of water, water supply, water treatment, water distribution, conservation, weather, ecosystems, waterborne diseases, and more. The activities are aligned with national Science Process Standards and Bloom’s revised (2001) *Cognitive Taxonomy of Educational Objectives*. All activities adhere to science curriculum, and many include math, social studies, and language arts.

For classrooms choosing to utilize the curriculum, every student receives a colorfully illustrated booklet of *The Story of Drinking Water*. Additionally, the District includes a classroom copy of *The Story of Drinking Water DVD*. The DVD makes learning about water fun and brings to life the materials contained in *The Story of Drinking Water* and *The Story of Drinking Water Teacher and Activity Guide*.

To enhance student learning, the District offers classroom field trip opportunities that include a tour of the following:

- Water Treatment Plant—which can process up to 25 million gallons of drinking water per day.
- Judy Reservoir—a 1.45-billion-gallon reservoir located above the town of Clear Lake.
- A stream within the watershed that is a supply source of the District’s water.

The District continues to work with Northwest Educational Service District 189 to partner on grant opportunities and to develop teacher workshops on water resources and conservation.

District staff members also participate in school science fairs. Staff hand out water saving items at the education booths, initiating a dialogue about water use efficiency and encouraging conservation. As an interactive educational tool, the District also has a spin wheel with related questions about simple water saving ideas to engage students and parents.

#### **5.2.1.5 Toilet Leak Kits**

Toilet leaks are caused by worn or damaged parts in the toilet flush tank and account for more than 95% of all water waste. Some of these leaks empty directly into the sewer line without leaving any evidence that a leak path is present. The District provides free toilet leak detection dye tablets for customers to determine if their toilets leak and also provides detailed information on how to fix leaks.

#### **5.2.1.6 Soil Moisture Meters**

According to the EPA, homeowners use between 30 and 70% of their water outdoors. Experts estimate that 50% of the water used outdoors goes to waste due to evaporation, wind, or runoff caused by overwatering. In 2012, the District began offering customers the Soil Moisture Meter,

which promotes healthier lawns, gardens, and shrubs and helps save water by eliminating improper watering. The meters accurately measure the moisture in the soil at the root level where it counts. By simply inserting the probe into the soil at root level, customers can read the meter and know instantly if too much or not enough watering has occurred. This takes the guess work out of watering.

#### **5.2.1.7 Rain Barrel Program**

In October 2010, the District introduced its Rain Barrel Program to single-family and commercial customers in order to create awareness and visibility around water use practices. As part of the program, District staff conducts small group workshops that teach customers how to build, set up, and maintain their rain barrels. The act of collecting rainwater can be an inspiration to find other ways to conserve water around the home. Due to the popularity of the program, the District is frequently invited to speak to various gardening clubs and schools about the benefits of harvesting rainwater. Rain barrels are also used for non-profit auction events to help market the program and raise awareness for the need to be good water stewards.

#### **5.2.1.8 System Leak Detection and Repair**

The District has meters on all its service connections. The 23,000-plus service meters are a critical piece in providing accurate information for WUE planning.

Between 2010 and 2012, the District's distribution system leakage 3-year rolling average was 11.1% of production. This number is a result of a recalculation of the DSL numbers from 2010 and 2011, due to a revision in the data that was used to determine the DSL. This result is greater than the 10% or less requirement of the Water Use Efficiency Rule and therefore requires a Water Loss Control Action Plan to reduce the DSL below 10%. The District identified a number of meter inaccuracies in 2011 that have been resolved, and is currently in the process of planning for the replacement of finished water meters on the transmission lines to Sedro-Woolley and Mount Vernon as they leave the WTP. These meter replacements are in addition to numerous other system meters that were replaced in 2012 and 2013 because of their age and limited ability to be incorporated into the District's telemetry system.

By comparison, the District's recorded distribution system leakage (fire flows, hydrant testing, water system flushing, unmetered consumption, and leaks) averaged around 25% for the period 1984 through 1990, peaking at 26.6% at the end of 1990.

On the supply-side, all services within the District's water systems are metered. Service meters range in size from 5/8-inch positive displacement water meters (the standard residential service) to 8-inch fire line meters with detector check assemblies. All new service meters, other than for single-family residential water services, are sized based on the International Association of Plumbing and Mechanical Officials Uniform Plumbing Code. The District tracks high-use meters to check on their



accuracy, and meter technicians routinely replace service meters that show signs of inaccuracy or failure.

The District's demand-side leak detection program is proactive, and consists of being aware of probable customer leaks, notifying customers, following-up with customers, and maintaining a leak adjustment policy that encourages prompt repair. The District began transitioning to the Badger ORION Automated Meter Reading (AMR) system starting in the fall of 2005. During the reading process, the AMR system alerts meter technicians, via a radio signal, of possible leaks if a water meter has not stopped moving for at least 1 hour over a 24-hour period. Likewise, during bill preparation, the billing system identifies customers with abnormally high consumption. Customer notification and follow-up occurs through various means, including door hangers, e-mail, mailings, and phone calls. The District's leak adjustment policy for adjusted water bills is 1.5 times the average of the last 2 years' billings for the same period, thus encouraging prompt repair.

A number of customers also participated in the District's Water Meter Monitor Program. Customers previously had the option to buy or borrow a water meter monitor to calculate their water use and receive an alert if a leak occurred. Unfortunately, due to technical issues with the water meter monitors, this program has been suspended until the manufacturer releases an upgraded model that is more user-friendly.

#### **5.2.1.9 Consumption History on Customer Bill Statements**

The District provides historical consumption data on bills to assist customers in understanding how their use varies throughout the year and from year to year. This information helps customers make informed choices about how they manage their water use, including implementing conservation efforts. Additionally, unexpected increases in use can alert customers to possible leaks. The District's customer bills have included historical use data since 1991. The bills include a bar graph showing water use for the previous 24 months, which can be helpful in showing customers the difference between their summer and winter water use.

#### **5.2.1.10 Large Meter Testing**

Due to the mechanical nature of a water meter, accuracy decreases as the meter ages. Since 2005, the District has worked with a meter repair contractor to perform testing, recalibration, and repair work on 2-inch and larger meters and fire hydrant meters within the distribution system. The meters are flow-tested for high, medium, and low accuracy rates. Meters that are under-reading or leaking are repaired or replaced. Approximately one-third of all large meters within the system are tested each year. In the spring, hydrant meters are tested and calibrated in advance of the upswing in use by customers for summer construction projects, crop irrigation, and livestock watering.

### **5.2.2 Estimated Savings**

The estimated WUE savings the District achieved from 2008 to 2013 are shown in Table 5-3. It is estimated that the program will have saved approximately 1.8 million gallons by the end of 2013.

**Table 5-3. Estimated Savings Achieved by 2008–2013 WUE Program**

Measure	Estimated Average Annual Savings					
	2008	2009	2010	2011	2012	2013
Public Outreach	N/Q	N/Q	N/Q	N/Q	N/Q	N/Q
Indoor Retrofit Kits	159,012	159,012	159,012	159,012	159,012	424,032
Shower Timers	--	N/Q	N/Q	N/Q	N/Q	N/Q
School Outreach	N/Q	N/Q	N/Q	N/Q	N/Q	N/Q
Toilet Leak Kits	N/Q	N/Q	N/Q	N/Q	N/Q	N/Q
Soil Moisture Meters	--	--	--	--	N/Q	N/Q
Rain Barrel Program	--	--	60,000	120,000	180,000	210,000
System Leak Detection & Repair	N/Q	N/Q	N/Q	N/Q	N/Q	N/Q
Bill Showing Consumption History	N/Q	N/Q	N/Q	N/Q	N/Q	N/Q
Large Meter Testing	N/Q	N/Q	N/Q	N/Q	N/Q	N/Q
Annual Total	159,012	159,012	219,012	279,012	339,012	634,032
Cumulative Total	--	--	--	--	--	1,789,092

\*N/Q = Not Quantifiable

**2008–2013 WUE PROGRAM MEASURE ASSUMPTIONS**

The numbers listed in Table 5-3 are based on the following assumptions:

- 80 indoor retrofit kits were distributed free in Year 1
- 15% implementation rate
- Household use based on 2.52 people/household
- Shower times based on national average of 8.2 minutes/shower
- Showerhead/faucet flow rates multiplied by 0.675 to obtain average actual flow rates
- Showerheads/faucets, post-1994 rated at 2.5 gallons/minute
- Rain barrel turnover rate at 11 times per year

### 5.2.3 Water Loss Control Action Plan

As a result of the 3-year rolling average for DSL being 11.1%, the District is required to complete a Water Loss Control Action Plan (WLCAP) according to WAC 246-290-820(1)(b)(iv) and 246-290-820(4). The District has a goal of reducing the DSL to less than 10% by 2015. Items of the WLCAP are discussed in this chapter, and are summarized below:

- The total water production, consumption, and DSL will be tracked and calculated on a monthly basis instead of a yearly basis to better track the DSL throughout the year, and to determine which WLCAP activities are having the biggest effect on the overall DSL. More frequent analysis of the data will help provide greater accuracy and confidence in the data being collected.
- The District has a program for large meter testing where one-third of all large meters are tested each year. In addition, all of the fire hydrant meters are tested and calibrated each spring in advance of the summer construction projects, crop irrigation, and livestock watering. This activity is funded through an operations budget and is routinely scheduled by District staff.
- The District will be replacing the water meter for the raw water that enters the WTP, as well as the two finished water meters on the transmission lines to Sedro-Woolley and Mount Vernon as they leave the WTP. This will be completed in early 2015 with an approximate cost of \$50,000.
- The District will be replacing some of the large Metron water meters that are considered inaccurate based on their age. This will be completed in early 2015 with an approximate cost of \$20,000.
- The District has an aggressive program of replacing aging and leaking water lines, as discussed in Chapter 10. Replacement of these lines is funded by the District's capital budget.
- As part of the District's new Asset Management program, a program will be implemented for inspecting system valves on a routine basis and repairing leaking valves as they are discovered. This activity will be funded through an operations budget.
- The District has a goal of repairing leaks as soon as they are found or when the District is notified.
- The District provides historical consumption data on each customer bill to track water usage. Any unexpected increases in use can alert customers to possible leaks and help the District repair those leaks.

All of these items in the WLCAP will be funded through a specific line item created in the 2014 budget to fund the WLCAP. In addition, the District will consider completing the International Water Association's (IWA) water audit to better ensure that the DSL is reduced to a manageable level. The District is very concerned with the amount of DSL and is committed to finding, repairing, and meeting the established DSL by 2015.

## 5.3 2014–2019 Water Use Efficiency Program

### 5.3.1 Goals

1. Save a cumulative total of 6 million gallons of water by 2019.
2. Reduce distribution system leakage to 10% or less of total water produced per year.

### 5.3.2 Measures

The District’s conservation program for 2014–2019 consists of the 10 measures listed in Table 5-4. Descriptions of each measure are provided below. All measures will be implemented during Years 1-6 of the plan. The program reflects a continuation and/or enhancement of many of the measures in the District’s 2008–2013 program.

**Table 5-4. 2014–2019 Water Use Efficiency Measures**

Measure Number	Measure	New/ Existing
1	Public Outreach	Existing
2	Indoor Retrofit Kits	Existing
3	Shower Timers	Existing
4	School Outreach	Existing
5	Toilet Leak Kits	Existing
6	Soil Moisture Meters	Existing
7	Rain Barrel Program	Existing
8	System Leak Detection & Repair	Existing
9	Bill Showing Consumption History	Existing
10	Large Meter Testing	Existing

#### 5.3.2.1 Public Outreach

The District will continue its various public outreach activities, as previously described in Section 5.2.1.1. In addition, the District will explore workshop opportunities and partnerships that address such topics as drip irrigation systems, use of pre-rinse spray valves in commercial and institutional kitchens, low water use landscaping, and toilet and urinal retrofits. Evaluation will consist of tracking the number of programs conducted and the number of program participants reached annually by District public outreach programs.

### **5.3.2.2 Indoor Retrofit Kits**

The District will continue providing customers with showerheads and faucet aerators to replace their less efficient fixtures, as previously described in Section 5.2.1.2. Evaluation will consist of annually tracking the number of showerheads and aerators provided. This value will then be multiplied by the per unit reduction in consumption for each efficient showerhead and aerator installed to determine the water savings achieved.

### **5.3.2.3 Shower Timers**

The District will continue offering free 5-minute shower timers to customers, as previously described in Section 5.2.1.3. The timers provide a visual reminder to people that they can easily reduce household water consumption by shortening time spent in the shower, even by 1 minute. Evaluation will consist of tracking the number of timers distributed.

### **5.3.2.4 School Outreach**

The District will continue providing school-based education programs, as previously described in Section 5.2.1.4. Evaluation will consist of tracking the number of programs conducted and the number of teachers and students reached annually by District education programs.

### **5.3.2.5 Toilet Leak Kits**

The District will continue providing free toilet leak detection kits to customers, as previously described in Section 5.2.1.5. Messaging will include detailed information focused on the reasons why toilet tanks typically leak and how to fix leaks. Evaluation will consist of annually tracking the number of leak detection kits provided to customers.

### **5.3.2.6 Soil Moisture Meters**

The District will continue providing customers soil moisture meters, as previously described in Section 5.2.1.6. Evaluation will consist of annually tracking the number of soil moisture meters provided to customers.

### **5.3.2.7 Rain Barrel Program**

The District will continue offering workshops and selling customers rain barrels, as previously described in Section 5.2.1.7. Evaluation will consist of annually tracking the number of rain barrels sold and distributed. This value will then be multiplied by the estimated gallons saved per barrel during the growing season to determine the total water savings achieved. The District will also seek out partnerships with outside organizations to market and creatively promote the rain barrel program.

### **5.3.2.8 System Leak Detection and Repair**

The District will continue with its leak detection and repair, as previously described in Section 5.2.1.8. Evaluation will consist of tracking the number of water leak adjustments processed annually.

### 5.3.2.9 Bills Showing Consumption History

The District will continue providing bills that show consumption history, as previously described in Section 5.2.1.9.

### 5.3.2.10 Large Meter Testing

The District will continue with its large meter testing and calibration program, as previously described in Section 5.2.1.10. Evaluation will consist of tracking the number of meter repairs performed annually.

### 5.3.3 Estimated Savings

The estimated savings and costs of the conservation program are shown in Table 5-5. At full program implementation at the end of 2019, it is estimated that the program will have saved approximately 6 million gallons.

The program will be funded through rate increases and is included in the budget discussed in Chapter 11. The savings achieved by the program, and the corresponding progress toward reaching the District’s savings goal, will be estimated by tracking the number of devices distributed and multiplying them by their per-unit savings.

**Table 5-5. Estimated Savings Achieved by 2014–2019 WUE Program**

Measure	Estimated Average Annual Savings					
	2014	2015	2016	2017	2018	2019
Public Outreach	N/Q	N/Q	N/Q	N/Q	N/Q	N/Q
Indoor Retrofit Kits	265,020	530,040	795,060	1,060,080	1,325,100	1,590,120
Shower Timers	N/Q	N/Q	N/Q	N/Q	N/Q	N/Q
School Outreach	N/Q	N/Q	N/Q	N/Q	N/Q	N/Q
Toilet Leak Kits	N/Q	N/Q	N/Q	N/Q	N/Q	N/Q
Soil Moisture Meters	N/Q	N/Q	N/Q	N/Q	N/Q	N/Q
Rain Barrel Program	21,000	42,000	63,000	84,000	105,000	126,000
System Leak Detection & Repair	N/Q	N/Q	N/Q	N/Q	N/Q	N/Q
Bill Showing Consumption History	N/Q	N/Q	N/Q	N/Q	N/Q	N/Q
Large Meter Testing	N/Q	N/Q	N/Q	N/Q	N/Q	N/Q
Annual Total	286,020	572,040	858,060	1,144,080	1,430,100	1,716,120
Cumulative Total	--	--	--	--	--	6,006,420

\*N/Q = Not Quantifiable

## 2014–2019 WUE PROGRAM MEASURE ASSUMPTIONS

The numbers listed in Table 5-5 are based on the following assumptions:

- 25 indoor retrofit kits sold per year
- 80% implementation rate
- Household use based on 2.52 people/household
- Shower times based on national average of 8.2 minutes/shower
- Showerhead/faucet flows rates multiplied by 0.675 to obtain average actual flow rates
- Showerheads/faucets, post-1994 rated at 2.5 gallons/minute
- 35 rain barrels sold/distributed per year
- Rain barrel turnover rate at 11 times per year

### 5.3.4 Effect on Demand

It is anticipated that the conservation program will be implemented evenly over the 6-year planning period; that is, one-sixth of the devices will be sold each year and one-sixth of the rebates will be distributed each year, with savings accumulating over time. The cumulative annual savings, as well as its relationship to the demand forecast, is provided in Table 5-6.

**Table 5-6. Savings Schedule and Impact on Average Demand**

Year	Projected Demand Without Conservation (ADD gpd)	Cumulative Annual Savings (gal. per year)	Projected Demand With Conservation (ADD gpd)	Demand Reduction (Percent)
2014	8,052,552	286,020	8,051,770	0.009%
2015	8,027,357	572,040	8,025,794	0.019%
2016	8,091,189	858,060	8,088,844	0.029%
2017	8,155,566	1,144,080	8,152,440	0.039%
2018	8,220,490	1,430,100	8,216,583	0.048%
2019	8,285,967	1,716,120	8,281,278	0.057%

ADD=Average Day Demand; gpd=gallons per day

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