Appendix D

2017 Water Use Efficiency Plan

City of Sumner Water Use Efficiency Plan

Updated: April 2017

Executive Summary

The City of Sumner, in accordance with the requirements of Washington State Administrative Code 246, has established water use efficiency goals and is implementing water use efficiency measures to ensure that water resources are used efficiently by the City's water utility.

The City initially established water use efficiency goals in 2008. Since that time, the water utility has exhibited a consistent decrease in the percentage of Distribution System Leakage along with a significant reduction in residential consumption rates.

This plan advocates for the adoption of a single goal aimed at reducing the Distribution System Leakage to less than 10% of the total water produced on a three year average annual basis.

Background

Municipal water suppliers are required by Washington State Administrative Code (WAC 246-290-810) to develop and implement a Water Use Efficiency (WUE) program. As a component of the WUE program, water suppliers are required to adopt water use efficiency goal(s) and the cost effective water use efficiency measures necessary to meet the established goal(s).

Washington State Administrative Code (WAC 246-290-830(7)) requires water use efficiency goals and water use efficiency measures to be evaluated and reestablished by the governing body of a public water system as part of developing or updating the water system plan as required in WAC 246-290-100. The City of Sumner is presently undertaking the creation of a new water system plan and is therefore required to evaluate and reestablish its water efficiency program, goals, and measures.

The WUE goal(s), measures, and program require a public process before adoption. The City is meeting this requirement through the following process:

> Sumner City Council's Public Works Committee consideration of the Water Use Efficiency Plan, Goals, and Measures within their April 5, 2017 meeting.
>
> A public forum held in conjunction with the April 17th Council meeting for the purpose of soliciting comments on the City's water use efficiency goals and methods; and
>
> Sumner's City Council will consider the review and adoption of the Water Use Efficiency Plan, Goals, and Measures within their regularly scheduled meeting on May 1st, 2017.

This document is intended to fulfill the City of Sumner's responsibilities with regards to the requirement to have a water efficiency program and consists of the following parts:

1. Description of the current water use efficiency program,
2. Evaluation of water distribution system efficiency,
3. Assessment of the water efficiency program's effectiveness,
4. Description of proposed water use efficiency goals, and
5. Description of water use efficiency measures to be implemented by the City.

Water Use Efficiency Performance Reports, Previous City actions related to water use efficiency, selected reference materials, and a Water Loss Control Action Plan are supplied as appendixes to this document.

Current Water Use Efficiency Program

2008 Goals & Measures

The City approved and adopted water efficiency goals in 2008 through Council Resolution #1232 (Agenda Bill 08-01).

Those goals were:

1) Reduce single family annual average daily water consumption from 283 gallons per day (2005 comprehensive Plan) to 260 gallons per day within five years.
2) Reduce the peak monthly average daily flow to no more than twice the base winter average daily flow or 1500 cubic feet per month within 5 years.
3) Reduce unaccounted hydrant use by 50% within five years.

To meet these goals, the City undertook the following measures (as stated in the Agenda Bill 08-01):

1) Provide customers with information on how to conserve water;
2) Promote the use of low use fixtures and appliances;
3) Provide customers information on proper use of water for irrigation and provide them rain gages to measure their irrigation usage; and
4) Improve our inspection of illegal use of water by contractors and others.

2009 Goals

The 2008 goals and measures were replaced with the adoption City Council Resolution #1284 (Agenda Bill 09-106) approving the 2009 Water System Plan. The 2009 Water Use Efficiency goals are:

1) Reduce the 3yr running average DSL [*Distribution System Leakage*] to 10 percent or less by 2016.
2) Reduce single family annual average daily water consumption from 262 gallons per day to 250 gallons per day by 2014.
3) Decrease demand by 7 percent per ERU [*Equivalent Residential Unit]* within the 20-year planning period.

2009 Discretionary Water Use Efficiency Measures

In 2009, it was determined that because of the size of the utility, the City would be required to implement or evaluate six discretionary water use efficiency measures in addition to the five mandatory water use efficiency measures prescribed by the WAC.

The six discretionary measures implemented consist of two measures implemented across four separate customer classes. These measures were:

1. Conservation rates – Conservation rate structures are set up for all customer classes in Sumner Municipal Code 13.24.300. The rates are changed on a yearly basis based on the CPI-U Index for the Seattle-Puget Sound area. The thresholds for the graduated rates remain the same, lowest rate for consumption up to 1,000 cubic feet per month, increased rate for water used between 1,000 and 2,000 cubic feet per month, and the highest rate for water used in excess of 2,000 cubic feet per month.
2. Water bill showing consumption history – The City's current water bills show customer consumption history over the past year on a month-to-month basis.

These measures are being implemented across the following four customer classes

1. Residential
2. Commercial
3. Industrial
4. Other (including schools, churches, motels/hotels, and multifamily connection)

2009 Mandatory Water Use Efficiency Measures

In addition to the discretionary measures above, the Water Efficiency Rule requires the following five mandatory measures be implemented. Those measures are:

1. Install production (source) meters (WAC 246-290-496[1]).
2. Install consumption (service) meters (WAC 246-290-496[2]).
3. Perform meter calibration (WAC 246-290-496[3]).
4. Implement a water loss control action plan (WCLAP) to control leakage (WAC 246-290-820[4]).
5. Educate customers about water use efficiency practices (WAC 246-290-810[4][f]).

2009 Water Use Efficiency Program

The City's existing Water Efficiency Program is documented within Section 5.4.2.2 of the 2009 Water System Plan.

Water Use Efficiency Performance Reports

The City is required to submit an annual water use efficiency performance report to the Department of Health annually. Water Use Efficiency Performance Reports submitted documenting performance between the years 2008 to 2015 are included in Appendix A.

Water Use Efficient Performance reports submitted for years 2008 to 2015 only evaluated the City's efficiency only with regards to the 2008 goals. Additionally, the distribution system leakage calculation reported on the performance reports was calculated based on the accounted for water rather than authorized water.

Evaluation of Water Distribution System Efficiency

Distribution System Leakage

The distribution system leakage (DSL) as reported to the Department of Health indicates a consistent declining trend in the percentage of un-accounted for water in the distribution system that appeared to meet the stated goal of a three year running average below ten percent in year 2016.

Investigation of the data and methodologies used to calculate this figure indicates that the methodology used tracked water that had been accounted for rather than water that had authorized uses.

Nevertheless, there does appear to be a consisted decrease in the distribution leakage with rates significantly below historical levels.

Re-Statement of Distribution System Leakage

To re-assess the efficiency of the system, the percentage of Distribution System Leakage was recalculated as shown in the following table:

Year	Total Production Mgal/Yr	Authorized Consumption Mgal/Yr	DSL Mgal/Yr	Recalculated DSL %	Recalculated 3 yr Average of DSL %	Annual DSL % Reported to DOH
2010	560	415	145	26%	22%	7%
2011	520	414	105	20%	23%	13%
2012	523	434	89	17%	21%	10%
2013	537	451	87	16%	18%	11%
2014	531	457	75	14%	16%	10%
2015	586	505	81	14%	15%	10%
2016	574	494	81	14%	14%	9%

Metered Residential Water Consumption Rates

City billing records showing annual water consumption and the number of service connections by classification type from 2010 to 2016 were examined. Records prior to 2010 were not readily available beyond the summary values published in the 2009 Water System Plan update.

For Single Family Residences, the metered annual consumption rate is shown in the following table and indicates the calculated consumption rate is relatively stable at levels significantly lower than the consumption rates identified in 2009 goals numbers 2 and 3 and 2008 goal number. 1.

Year	Residential Consumption /Metered Service gal/ day /Service	Jun-Sept Precipitation (at Lakeland Hills) inches

Year	Residential Consumption /Metered Service gal/ day /Service	Jun-Sept Precipitation (at Lakeland Hills) inches
2010	180	8.97
2011	174	3.95
2012	183	4.49
2013	177	11.56
2014	180	7.13
2015	189	4.71
2016	175	5.21

Given the apparent effectiveness of the City's efforts in bringing the annual consumption rate below the established goals, it is unlikely that further reduction in metered consumption should be expected.

Assessment of the Water Efficiency Programs Effectiveness

Reducing Distribution System Leakage

The City's 2009 water efficiency goal number 1 was to reduce the Distribution System Leakage on a 3 year running average to under 10%.

The present assessment of the distribution system leakage indicates the distribution System Leakage when calculated according to DOH guidance; is that it has been consistently reduced to around 14% which is below historical levels for the utility.

Single Family Daily Water Consumption

The current residential water consumption rate is significantly below the residential water consumption rate targeted in the 2009 goal number 2 and in the 2008 goal number 1.

Demand per Equivalent Residential Unit (ERU)

The City's 2009 goal number 3 was to reduce the demand by 7% per ERU within the 20 year planning period.

A 2008 demand of 202.8 gallons per day per ERU would need to be reduced below, 188.6 gallons per day per ERU to meet this goal. In six of the seven years between 2000 and 2016, the City has met this criterion.

Peak Water Consumption

The City's 2008 goal number 2 was to reduce the peak month's average daily flow to no more than twice the base winter average daily flow or 1500 cubic feet per month [369 gal/day] by 2013. Peak summer month average daily flow has met this goal in 5 of the previous 6 years for which data is available.

Illegal Water Use

The City's 2008 goal number 3 was to "reduce unaccounted hydrant use". Contractor use is specifically identified within the measures to be taken to meet this goal.

The City's hydrant meter rental program tracking the amount of water used in construction activities shows the authorized water quantity identified in this program increasing significantly since 2007. This increase indicates the program is being implemented and is effective in capturing the quantities of water used in construction activities.

It is not clear that the illegal water withdraw from hydrants in the industrial portions of the City has been eliminated. These hydrants are often located behind fenced industrial properties making them difficult for operations staff to monitor.

Recommended Goals

The following goal is recommended for adoption by the City in conjunction with the 2017 update to the City's water system plan.

> **GOAL:**
> **Reduce the 3-year running average Distribution System Leakage (DSL) to 10 percent or less by 2025.**

Discussion of Proposed Goal

The primary objective of the water use efficiency program is to ensure that the City's water resources are used effectively and efficiently. Since this objective is measured by a single metric in the Washington Administrative Code, it is proposed that the City focus its goal on meeting the standard contained in the code. (WAC 246-290-820 (1)(b)(i))

The residential water consumption rate exhibits a stable annual pattern below historical maximums indicating an efficient use of water by the City's retail customer base. This is likely the result of the City's existing efforts at communicating the importance or water conservation and the City's progressive rate structure that discourages excessive use of water. Setting goals, similar to those used previously, to address single family residential water consumption rates was not deemed necessary.

Water Efficiency Measures

Selected Water Use Efficiency Measures

The Water Efficiency Rule requires the implementation of the discretionary and mandatory water use efficiency measures necessary to achieve the water efficiency goals established for the City.

The City presently has 3,832 service connections. The State requirement for systems with 2,500 to 9,999 service connections is to implement or evaluate six water use efficiency measures beyond the mandatory measures. (WAC 246-290-810 (4)(i))

This plan recommends the City continue to meet the discretionary water use efficiency measure requirement through the implementation of two water use efficiency measures across four separate customer classes resulting in the implementation of eight (8) water efficiency measures. These two water use efficiency measures are:

1. Conservation rates – Conservation rate structures are set up for all customer classes in Sumner Municipal Code 13.24.360 & 370. The rates are changed on a yearly basis based on the CPI-U Index for the Seattle-Puget Sound area. The thresholds for the graduated rates remain the same, lowest rate for consumption up to 1,000 cubic feet per month, increased rate for water used between 1,000 and 2,000 cubic feet per month, and the highest rate for water used in excess of 2,000 cubic feet per month.
2. Water bill showing consumption history – The City's current water bills show customer consumption history over the past year on a month-to-month basis.

These measures are implemented across the following four customer classes:

1. Residential
2. Commercial
3. Industrial
4. Other (including schools, churches, motels/hotels, and multifamily connection)

Mandatory Water Use Efficiency Measures

In addition to the measures above, the Water Efficiency Rule requires the following five mandatory measures be implemented. Those measures are:

1. Install production (source) meters (WAC 246-290-496[1]),
2. Install consumption (service) meters (WAC 246-290-496[2]),
3. Perform meter calibration (WAC 246-290-496[3]),
4. Implement a water loss control action plan (WCLAP) to control leakage (WAC 246-290-820[4]), and
5. Educate customers about water use efficiency practices (WAC 246-290-810[4][f]).

This plan recommends the City continue the existing policies used to implement these water use efficiency measures.

Water Loss Control Action Plan

The City will implement the Water Loss Control Action Plan contained in appendix C in accordance with WAC 246-290-820(4)(a to f).

Components of the Water Loss Control Action Plan include:

- Control methods necessary to achieve compliance with the distribution system leakage standard of less than 10% Distribution System Leakage over a three year average;
- An implementation schedule for the control methods to be implemented;

- A budget that demonstrates how the control methods will be funded.
- Technical and economic concerns which may affect the City's ability to implement a program or comply with the standard including past efforts and investments to minimize leakage.
- Address the data accuracy and data collection methods used to determine distribution system leakage.

Specific Actions identified in the Water Use Efficiency Measures and the Water Loss Control Action Plan

Specific actions have been identified within the Water Loss Control Action Plan necessary to carry out the water use efficiency measures necessary to meet the City's goal are highlighted here.

Demand Side Actions

Demand side actions identified by operations staff, likely to substantially impact the system efficiency are eliminating unmetered connections within commercial/industrial properties and preventing unauthorized water withdraw from fire hydrants.

Un-Metered Connections

Two commercial/industrial properties have the potential to have un-authorized connections to the water distribution system due to distribution lines being located within their property boundaries.

The recommendation of this plan is for the City to take steps to abandon or re-route the existing distribution lines from these properties if an authorized connection to the City's utility cannot be established.

Un-Authorized Fire Hydrant Use

Water operations staff has anecdotal evidence of commercial businesses in the industrial area drawing water from fire hydrants without obtaining proper authorization.

An initial program to address this issue will be to modify the operations and maintenance procedures with provisions that will identify the frequency that un-authorized withdraw from fire hydrants occur throughout the City. Once the extent of the problem is known, further targeted actions can be implemented to address particular violations.

The City understands the need to work closely with the local Fire Marshal in the development of any programs involving fire hydrants to ensure it will not inhibit the fire prevention capabilities of the local fire departments.

Supply Side Actions

Actions to ensure the supply and distribution systems are operating efficiently will include the following actions.

Instrumentation and Telemetry Improvements

The City is presently undertaking a capital project to modernize the water system telemetry infrastructure and is investigating the replacement of the County Springs ultrasonic master meter.

The completion of these two projects will allow the City to better calculate the water being produced.

Distribution System Leaks

The City has allocated $250,000 in the ’17-’18 budget for Replacement of Water Mains (594.340.63.11), along with $1,724,000 for water main extensions. From this funding the City anticipates being able to respond to the majority of the system leaks as they are discovered.

Leaks that are beyond the capability of the operations staff to repair will be prioritized by the City’s Engineer to contract for their repair.

Appendix A

Water Use Efficiency Performance Reports for Years 2008 to 2016

Washington State Department of Health
Division of Environmental Health
Office of Drinking Water

Date Submitted: 3/8/2016

Water Use Efficiency
Annual Performance Report - 2015

WS Name: SUMNER, CITY OF Water System ID# : 85120 WS County: PIERCE

Report submitted by: *Shaun Piper*

Meter Installation Information:

Estimate the percentage of metered connections: *More Than 75%*

If not fully metered - Current status of meter installation:

To date there are two customers that are not metered, Sonoco Products and American Autoclave.

Production, Authorized Consumption, and Distribution System Leakage Information:

12-Month WUE Reporting Period: *01/01/2015* To *12/31/2015*

Incomplete or missing data for the year? *Yes*

If yes, explain:

Unmetered water for Sonoco Products and American Autoclave.

Distribution System Leakage Summary:

Total Water Produced and Purchased (TP) – Annual Volume	*583,520,000* gallons
Authorized Consumption (AC) – Annual Volume	*526,195,221* gallons
Distribution System Leakage – Annual Volume TP – AC	*57,324,779* gallons
Distribution System Leakage – Percent DSL = [(TP – AC) / TP] x 100	*9.8 %*
3-year annual average	*10.2 %*

Goal-Setting Information:

Date of Most Recent Public Forum: *01/07/2008* Has goal been changed since last performance report? *No*

Note: Customer goal must be re-established every 6 years through a public process

WUE Goals:

Customer Goal (Demand Side):

1. Reduce single-family annual average daily water consumption from 283 gallons per day (as listed in the 2005 Comprehensive Plan) to 260 gallons per day within five years. 2. Reduce the peak monthly average daily flow to no more than twice the base winter average daily flow within five years. 3. Reduce unaccounted hydrant use by 50% within five years.

Describe Progress in Reaching Goals:

Customer (Demand Side) Goal Progress:

Goal #1. The annual average daily flow from residential connections in 2014 was 194 gallons per day which saved 89.3 million gallons per year. In 2015 the average daily flow was 208 gallons per day which saved 76.2 million gallons per year. The water saved decreased by 14.6% in 2015 over the previous year 2014.

Goal #2. The peak (or highest monthly) average daily flow for 2015 was 2.8 million gallons per day and the base winter (or lowest monthly) average daily flow was 1.2 million gallons per day. The peaking factor was 2.3 times the base winter use which is .3 over the goal. In 2014 the peak average daily flow was 2.3 million gallons while the base winter average daily flow was .83 million gallons per day. The peaking factor for 2014 was 2.7 which was .7 over the goal. The peaking factor in 2015 was slightly over the goal but showed improvement over the previous year.

Goal #3. Fire hydrants are used by contractors and others for various uses and by the local fire department (East Pierce Fire and Rescue) to fight fires and to practice drill on equipment. Unauthorized users are given a warning on first offence and told to get a city issued permit or city issued fire hydrant flow meter. Second offence is met with a fine. Hydrant flow meters are issued to contractors and are part of authorized water use.

Additional Information Regarding Supply and Demand Side WUE Efforts

Include any other information that describes how you and your customers use water efficiently:

To help reduce distribution leakage leak detection was performed on 21 miles of pipe in 2015. Several leaks were pin pointed on water mains, valves, fire hydrants, service lines and connections. Total water loss was identified at 30.75 gallons per min with a loss of 16.1 million gallons per year. These leaks are in the process of being identified and repaired.

Other ways the city continues to help promote water conservation is through the Water Quality report that includes information on water conservation is mailed in all utility bills and posted online. Article in the newspaper in the summer of 2015 was mailed to over 3,500 households and is available at the local library and city hall. E-news goes out to a subscriber list of over 800. Water conservation is featured on the city webpage and reminders are on the city twitter account.

Do not mail, fax, or email this report to DOH

Washington State Department of Health
Division of Environmental Health
Office of Drinking Water

Date Submitted: 6/25/2015

Water Use Efficiency
Annual Performance Report - 2014

WS Name: SUMNER, CITY OF Water System ID# : 85120 WS County: PIERCE

Report submitted by: *Tony Utanis*

Meter Installation Information:

Estimate the percentage of metered connections: *More Than 75%*

If not fully metered - Current status of meter installation:

To date there are two customers that are not metered, Sonoco Products and American Autoclave.

Production, Authorized Consumption, and Distribution System Leakage Information:

12-Month WUE Reporting Period: *01/01/2014* To *12/31/2014*

Incomplete or missing data for the year? *Yes*

If yes, explain:

Unmetered water for Sonoco Products and American Autoclave. 1 week in February and 1 week in December missing data flow for Sumner Springs and County Springs master meters.

Distribution System Leakage Summary:

Total Water Produced and Purchased (TP) – Annual Volume	*522,675,658* gallons
Authorized Consumption (AC) – Annual Volume	*469,729,287* gallons
Distribution System Leakage – Annual Volume TP – AC	*52,946,371* gallons
Distribution System Leakage – Percent DSL = [(TP – AC) / TP] x 100	*10.1 %*
3-year annual average	*10.4 %*

Goal-Setting Information:

Date of Most Recent Public Forum: *01/07/2008* Has goal been changed since last performance report? *No*

Note: Customer goal must be re-established every 6 years through a public process

WUE Goals:

Customer Goal (Demand Side):

1. Reduce single-family annual average daily water consumption from 283 gallons per day (as listed in the 2005 Comprehensive Plan) to 260 gallons per day within five years. 2. Reduce the peak monthly average daily flow to no more than twice the base winter average daily flow within five years. 3. Reduce unaccounted hydrant use by 50% within five years.

Describe Progress in Reaching Goals:

Customer (Demand Side) Goal Progress:

Goal #1. The annual average daily flow from residential connections in 2013 was 202 gallons per day which saved 82.2 million gallons per year. In 2014 the average daily flow was 195 gallons per day which saved 89.3 million gallons per year. The water saved increased by 7.8% in 2014 over the previous year 2013.

Goal #2. The peak (or highest monthly) average daily flow for 2014 was 2.3 million gallons per day and the base winter (or lowest monthly) average daily flow was .83 million gallons per day. The peaking factor was 2.77 times the base winter use which is .77 over the goal. In 2013 the peak average daily flow was 2.3 million gallons while the base winter average daily flow was .85 million gallons per day. The peaking factor for 2013 was 2.71 which was .71 over the goal. This slight increase in 2014 might be from missing meter data from the two unmetered customers and unidentified leaks in the system.

Goal #3. Fire hydrants are used by contractors and others for various uses and by the local fire department (East Pierce Fire and Rescue) to fight fires and to practice drill on equipment. Unauthorized users are given a warning on first offence and told to get a city issued permit or city issued fire hydrant flow meter. Second offence is met with a fine. Hydrant flow meters are issued to contractors and are part of authorized water use.

Additional Information Regarding Supply and Demand Side WUE Efforts

Include any other information that describes how you and your customers use water efficiently:

To help reduce distribution leakage leak detection was performed on 17.89 miles of pipe in 2014. Several leaks were pin pointed on water mains, valves, fire hydrants, service lines and connections. Total water loss was identified at 12.5 gallons per min with a loss of 6.5 million gallons per year. These leaks are in the process of being identified and repaired.

Other ways the city continues to help promote water conservation is through Newsletter features, E-news features, Website including locally produced YouTube video about planting well to avoid overwatering, Water Quality Report mailed in utility bills and Sumner University, featuring Public Works session.

Do not mail, fax, or email this report to DOH

Annual Water Use Efficiency Performance Report Form

Please refer to the *Getting Started: Water Use Efficiency Guidebook* **Today's Date: 4/29/2014**

General System Information

System Name:	SUMNER, CITY OF
System ID #:	85120
County:	PIERCE
Your Name:	Tony Utanis
Your Title:	Field Supervisor
Your Email Address:	tonyu@ci.sumner.wa.us
Your Phone Number:	(253) 299-5740

Meter Installation Information

Estimate the percentage of metered connections:	More Than 75%
Current status of meter installation:	Two customers are not metered, Sonoco Products and American Autoclave

Production, Authorized Consumption, and Distribution System Leakage Information

Reporting Year:	2013
12-Month WUE Reporting Period:	January 01, 2013 to December 31, 2013
Incomplete or missing data for the year?	Yes
If yes, explain:	Unmetered water for Sonoco Products and American Autoclave. 2 weeks of missing flow data from the Sumner Springs master meter.

Distribution System Leakage Summary		
Total Water Produced and Purchased (TP) - Annual Volume	508,494,000	Gallons
Authorized Consumption (AC) - Annual Volume	453,521,942	Gallons
Distribution System Leakage - Annual Volume TP - AC	54,972,058	Gallons
Distribution System Leakage - Percent DSL = [(TP - AC) / TP] x 100	10.8	%
3-Year Annual Average - Percent	11.4	*% 2011, 2012, 2013*

Goal-Setting Information

Date of most recent public forum:	January 07, 2008
Has goal been changed since last WUE report?	No
Demand Side Goal:	1. Reduce single-family annual average daily water consumption from 283 gallons per day (as listed in the 2005 Comprehensive Plan) to 260 gallons per day within five years. 2. Reduce the peak monthly average daily flow to no more than twice the base winter average daily flow within five years. 3. Reduce unaccounted hydrant use by 50% within five years.
Demand Side Goal Progress:	Goal #1. The annual average daily flow from residential connections in 2012 was 207 gallons per day which saved 76.5 million gallons per year. In 2013 the average daily flow was 194 gallons per day which saved 90.2 million gallons per year. The water saved in 2013 increased by 15%. Goal #2. The peak (or highest monthly) average daily flow for 2013 was 2.3 million gallons per day and the base winter (or lowest monthly) average daily flow was .85 million gallons per day. The peaking factor was 2.8 times the base winter use which is .8 over the goal. In 2012 the peak average daily flow was 2.1 million gallons while the base winter average daily flow was 1.04 million gallons. This increase in 2013 might be from missing data of a master meter in the base winter months. Goal #3. Fire hydrants are used by contractors and others for various uses and by the local fire department (East Pierce Fire and Rescue) to fight fires and to practice drill on equipment. Unauthorized users are given a warning on first offence and told to get a city issued permit or city issued fire hydrant flow meter. Second offence is met with a fine. The city has asked local fire department to give estimates of water used from fire hydrants so water usage can be counted but as to date estimates are not reported to water personnel. One reason for not getting the data might be that there is not a person assigned and responsible to ensure the water used is reported.
Additional Information:	

Leak detection has been done throughout the city and is ongoing saving millions of gallons per year. 17 miles of water main will be checked in 2014 and any leaks found will be repaired. The County Springs equipment has been in use since the 1980s and should be replaced with updated equipment, this proposal will be put in 2015 budget. Other ways the city has helped promote water conservation was through Newsletter features, E-news features, Website including locally produced YouTube video about planting well to avoid overwatering, Water Quality Report mailed in utility bills and Sumner University, featuring Public Works session.

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Annual Water Use Efficiency Performance Report Form

Please refer to the *Getting Started: Water Use Efficiency Guidebook* **Today's Date:** 5/14/2013

General System Information

System Name:	SUMNER, CITY OF
System ID #:	85120
County:	PIERCE
Your Name:	Shaun Piper
Your Title:	Operator 2
Your Email Address:	shaunp@ci.sumner.wa.us
Your Phone Number:	(253) 299-5740

Meter Installation Information

Estimate the percentage of metered connections:	More Than 75%
Current status of meter installation:	3 users are not metered Sonoco, Wattles, and American Autoclave

Production, Authorized Consumption, and Distribution System Leakage Information

Reporting Year:	2012
12-Month WUE Reporting Period:	January 01, 2012 to December 31, 2012
Incomplete or missing data for the year?	Yes
If yes, explain:	The Sonoco-Wattles-American Autoclave service lines are not metered. Leaks have been identified and eliminated in July 2010. Service meters were supposed to have been installed in 2011 but as to date they have not been installed. The City will contact the owners to inquire as to why they have not been installed and to discuss a completion date for installation of those meters

Distribution System Leakage Summary		
Total Water Produced and Purchased (TP) - Annual Volume	525,859,000	Gallons
Authorized Consumption (AC) - Annual Volume	471,731,451	Gallons
Distribution System Leakage - Annual Volume TP - AC	54,127,549	Gallons
Distribution System Leakage - Percent DSL = [(TP - AC) / TP] x 100	10.3	%
3-Year Annual Average - Percent	10.2	*% 2010, 2011, 2012*

Goal-Setting Information

Date of most recent public forum:	January 07, 2008
Has goal been changed since last WUE report?	No
Demand Side Goal:	1. Reduce single-family annual average daily water consumption from 283 gallons per day (as listed in the 2005 Comprehensive Plan) to 260 gallons per day within five years. 2. Reduce the peak monthly average daily flow to no more than twice the base winter average daily flow within five years. 3. Reduce unaccounted hydrant use by 50% within five years.
Demand Side Goal Progress:	First Goal: The annual average daily flow from residential connections (including distribution system leakage (DSL) was 207 GPD in 2012 which saved 76.5 million gallons per year. Second Goal: The peak (or highest monthly) average daily flow for 2012 was 2.1 MGD and the base winter (or lowest monthly) daily average flow was 1.04 MGD. The peaking factor was 2.05 times the base winter which is .05 over the goal. Third Goal: The City of Sumner is taking steps to reduce unauthorized use of fire hydrants and has looked into hydrant locks that would eliminate hydrant use with a special key. The City is discussing the use of the hydrant lock system with the local fire department (East Pierce Fire and Rescue). As to date no agreement has been reached. The City will be including a statement in their bi-monthly billing to inform customers to report any unauthorized fire hydrant usage by anyone other than city personnel or fire departments.
Additional Information:	

December 2012 the City replaced a master meter to more accuratley measure water entering the distribution system. system. 1. Water Quality Report includes section on water conservation. Included in all utility bill mailings. 2. Winter 2012 newsletter: tells citizens how to call PW if pipes freeze so they do not shut off their own water and break the meter, causing a major water leak (geyser?) 3. Fertilizer poster: collected information on when to fertilize different plants to promote correct fertilization to aid water conservation and quality. Poster available at City Hall, online, at the Fred Meyer basket planting event in April, and promoted in Spring 2012 newsletter. 4. May E-news: included video on how to select plants/annuals so use less water and how to install/convert to a drip irrigation system 5. Ongoing: Video on selecting plants/drip irrigation available on City website

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Washington State Department of Health
Division of Environmental Health
Office of Drinking Water

Date Submitted: 6/28/2012

Water Use Efficiency
Annual Performance Report - 2011

WS Name: SUMNER, CITY OF Water System ID# : 85120 WS County: PIERCE

Report submitted by: *ANTHONY UTANIS*

Meter Installation Information:

Estimate the percentage of metered connections: *More Than 75%*

If not fully metered - Current status of meter installation:

3 users are not metered Sonoco, Wattles, and American Autoclave

Production, Authorized Consumption, and Distribution System Leakage Information:

12-Month WUE Reporting Period: *01/01/2011* To *12/31/2011*

Incomplete or missing data for the year? *Yes*

If yes, explain:

The Sonoco-Wattles-American Autoclave service lines are not metered. Leaks have been identified and eliminated in July 2010. Service meters were supposed to have been installed in 2011 but as to date they have not been installed. The City will contact the owners to inquire as to why they have not been installed and to discuss a completion date for installation of those meters.

Distribution System Leakage Summary:

Total Water Produced and Purchased (TP) – Annual Volume	*498,944,800* gallons
Authorized Consumption (AC) – Annual Volume	*433,616,228* gallons
Distribution System Leakage – Annual Volume TP – AC	*65,328,572* gallons
Distribution System Leakage – Percent DSL = [(TP – AC) / TP] x 100	*13.1 %*
3-year annual average	*13.6 %*

Goal-Setting Information:

Date of Most Recent Public Forum: *01/07/2008* Has goal been changed since last performance report? *No*

Note: Customer goal must be re-established every 6 years through a public process

WUE Goals:

Customer Goal (Demand Side):

1. Reduce single-family annual average daily water consumption from 283 gallons per day (as listed in the 2005 Comprehensive Plan) to 260 gallons per day within five years. 2. Reduce the peak monthly average daily flow to no more than twice the base winter average daily flow within five years. 3. Reduce unaccounted hydrant use by 50% within five years.

Describe Progress in Reaching Goals:

Customer (Demand Side) Goal Progress:

First Goal: The annual average daily flow from residential connections (including distribution system leakage (DSL) was 207 GPD in 2011. This goal has been reached in each of the past four years. Second Goal: The peak (or highest monthly) average daily flow for 2011 was 2.3 MGD and the base winter (or lowest monthly) daily average flow was 1.1 MGD. The peaking factor was 2.02 times the base winter which is .02 over the goal. Third Goal: The City of Sumner is taking steps to reduce unauthorized use of fire hydrants and has looked into hydrant locks that would eliminate hydrant use with a special key. The City is discussing the use of the hydrant lock system with the local fire department (East Pierce Fire and Rescue). As to date no agreement has been reached. The City will be including a statement in their bi-monthly billing to inform customers to report any unauthorized fire hydrant usage by anyone other than city personnel or fire departments.

Additional Information Regarding Supply and Demand Side WUE Efforts

Include any other information that describes how you and your customers use water efficiently:

April 2011 leak detection was performed on 20 miles of water main. Leaks totalling 15.9 MG per year were found and repaired. A Pierce County TV story regarding how to plant to use less water and install drip systems aired Spring-Summer 2011 and is still available on You Tube. The same video story was posted on our website Spring 2011. The city updated its water bill design which makes it easier to see current water use vs. historic and was launched Spring 2012. Several conservation articles were included in our E-news (May 2011)and Newsletter (Fall and Winter 2011).

Do not mail, fax, or email this report to DOH

Washington State Department of Health
Division of Environmental Health
Office of Drinking Water

Date Submitted: 5/26/2011

Water Use Efficiency
Annual Performance Report - 2010

WS Name: SUMNER, CITY OF Water System ID# : 85120 WS County: PIERCE

Report submitted by: *Tony Utanis*

Meter Installation Information:

Is your water system fully metered? *No*

If not fully metered - Current status of meter installation:

3 users are not metered, Sonoco Co., Wattles Co, and American Auto Clave.

Production, Authorized Consumption, and Distribution System Leakage Information:

12-Month WUE Reporting Period: *01/01/2010* To *12/31/2010*

Incomplete or missing data for the year? *Yes*

If yes, explain:

Sonoco – Wattles water main loop is not metered. Leaks have been identified and eliminated in July 2010. The leak was estimated at 100gpm which accounts for 26-27 million gallons. The City of Sumner is working with the owners to have meters installed in 2011. American Autoclave is not metered and uses an unknown amount of water annually. The City of Sumner is working on having a meter installed in 2011.

Distribution System Leakage Summary:

Total Water Produced and Purchased (TP) – Annual Volume	*586,401,255* gallons
Authorized Consumption (AC) – Annual Volume	*544,145,704* gallons
Distribution System Leakage – Annual Volume TP – AC	*42,255,551* gallons
Distribution System Leakage – Percent DSL = [(TP – AC) / TP] x 100	*7.2 %*
3-year annual average	*15.6 %*

Goal-Setting Information:

Date of Most Recent Public Forum: *01/07/2008* Has goal been changed since last performance report? *No*

Note: Customer goal must be re-established every 6 years through a public process

WUE Goals:

Customer Goal (Demand Side):

1. Reduce single-family annual average daily water consumption from 283 gallons per day (as listed in the 2005 Comprehensive Plan) to 260 gallons per day within five years.
2. Reduce the peak monthly average daily flow to no more than twice the base winter average daily flow within five years.
3. Reduce unaccounted hydrant use by 50% within five years.

Describe Progress in Reaching Goals:

Customer (Demand Side) Goal Progress:

First Goal: The annual average daily flow from residential connections (including distribution system leakage (DSL) was 239 gpd in 2008 and 256 gpd in 2009 and 197 gpd in 2010. This goal has been reached in each of the past three years.
Second Goal: The peak (or highest monthly) average daily flow for 2010 was 2.5 MGD and the base winter (or lowest monthly) daily average flow was 1.08 MGD. The peaking factor was 2.33 times the base winter which is .33 times over the goal. This goal was reached in 2008 but not in 2009 and 2010.
Third Goal: The City of Sumner is taking steps to reduce unauthorized use of fire hydrants and has looked into hydrant locks that would eliminate hydrant use with a special key. The City is discussing the use of the hydrant lock system with the local fire department(East Pierce Fire and Rescue).

Additional Information Regarding Supply and Demand Side WUE Efforts

Include any other information that describes how you and your customers use water efficiently:

Through leak detection in '03, '06, '08, and '09, several leaks were identified and repaired, saving millions of gallons per year. In 2011, 20 miles of water main is scheduled for leak detection.
In 2010, Sumner laid the foundation for a future education campaign about conservation. This involved meeting with Cascade Water Alliance to learn how they conduct conservation campaigns, drafting Sumner's first conservation campaign communications plan, meeting with REI's Green Team to get feedback on what they thought would work/not work for conservation campaign, joining WaterSense and participating in the online introduction webinar, running a water conservation article in City newsletter, summer edition (print 6000 and direct mail with rest available at City Hall and Sumner library), and running water conservation tips in the 2009 water quality report, mailed to all utility bill recipients in 2010.

Do not mail, fax, or email this report to DOH

Washington State Department of Health
Division of Environmental Health
Office of Drinking Water

Date Submitted: 6/29/2010

Water Use Efficiency
Annual Performance Report - 2009

WS Name: SUMNER, CITY OF Water System ID# :85120 WS County: PIERCE

Report submitted by: *Tony Utanis*

Meter Installation Information:

Is your water system fully metered? *No*

If not fully metered - Current status of meter installation:

Currently there are three users that are not metered. They are: 1. Sonocco-Wattles water loop off of Steele St. 2. American Autoclave off of 78th St. 3. City of Sumner cemetery.

Production, Authorized Consumption, and Distribution System Leakage Information:

12-Month WUE Reporting Period: *01/01/2009* To *12/31/2009*

Incomplete or missing data for the year? *Yes*

If yes, explain:

1. The Sonocco-Wattels water main loop is not metered and has an estimated 35-50 gallons per minute leak which accounts for 18 to 26 million gallons lost annually. The city is working with the owners to have the leak repaired and meters installed to account for the loss.
2. American Autoclave uses an unknown amount of water annually due to not having it's service metered. They City is working on having a meter install on this service.
3. The City of Sumner's cemetery also is not metered and it's usage is estimated by the number of sprinklers used at a given time. A meter will be installed in the first part of July 2010.
4. In 2009 production meters were checked for accuracy. County Springs remote telemetry unit was reading approximately 50 gpm more than the actual flow through the meter. In June 2009 the RTU was adjusted to correlate to the actual readings at the flow meter. The South Well master meter was reading 14gpm more than actual flow, no adjustment made.

Distribution System Leakage Summary:

Total Water Produced and Purchased (TP) – Annual Volume	*615,500,000* gallons
Authorized Consumption (AC) – Annual Volume	*490,210,000* gallons
Distribution System Leakage – Annual Volume TP – AC	*125,290,000* gallons
Distribution System Leakage – Percent DSL = [(TP – AC) / TP] x 100	*20.4 %*
3-year annual average	*17.7 %*

Goal-Setting Information:

Date of Most Recent Public Forum: *01/07/2008* Has goal been changed since last performance report? *No*

Note: Customer goal must be re-established every 6 years through a public process

WUE Goals:

Customer Goal (Demand Side):

The City Council passed Resolution 1232 on January 7, 2008, setting the following goals:
1. Reduce single-family annual average daily water consumption from 283 gallons per day (as listed in 2005 Comprehensive Plan) to 260 gallons per day within five years.
2. Reduce the peak monthly average daily flow to no more than twice the base winter average daily flow within five years.
3. Reduce unaccounted hydrant use by 50% within five years.

Describe Progress in Reaching Goals:

Customer (Demand Side) Goal Progress:

First goal: The annual average daily flow from residential connections (including distribution system leakage [DSL]) was 239 gallons per day (gpd) in 2008 and 256 gpd in 2009. This goal has been reached in each of the past 2 years. The year 2009 had a higher average flow because the summer months were hotter and drier than the summer of 2008.
Second goal: The peak monthly average daily flow was 2.35 MGD in 2008 and 2.87 MGD in 2009. The base winter (or lowest monthly) daily average was 1.27 MGD in 2008 and 1.30 MGD in 2009. The peaking factor was 1.85 MGD in 2008 and 2.21 MGD in 2009; meaning the goal was met in 2008 but not in 2009. This is probably due to the hotter, drier summer of 2009.
Third goal: The City is taking steps to reduce unaccounted hydrant use by fifty percent and is looking into hydrant locks that would eliminate hydrant use without a special key. The City received approval from the local fire department (East Pierce Fire and Rescue) for the hydrant-lock and key system. Each year the City will budget for enough locks to lock ten hydrants. Fire hydrants that are in remote areas will receive the locks.

Additional Information Regarding Supply and Demand Side WUE Efforts

Include any other information that describes how you and your customers use water efficiently:

The city did leak detection in 2003, 2006, 2008 and in 2009. Several leaks have been identified and repaired saving 10 million gallons per year.
In 2009 production meters were checked for accuracy. County Springs remote telemetry unit was reading approximately 50 gpm more than the actual flow through the meter. The RTU was adjusted to correlate to the actual readings at the flow meter. The South Well master meter was reading 14gpm more than actual flow. No adjustment made at this time.
The city is looking into hydrant tampering devises to pinpoint unauthorized hydrant use.
With the hot summer in 2009, Sumner's education efforts for conservation took hold; in fact, it was one of the few cities whose efforts made regional news. We provided water conservation tips online, in utility bills, as a poster at the Sounder commuter station. We also aired water conservation tips through Pierce County TV and successfully got a story on KOMO TV including tips to conserve water.
In addition to the summer publicity, we participated in two "green" education events at McLendon Hardware and also offered conservation tips at our own Sumner University. In 2009, our water conservation education efforts resonated well. All efforts were voluntary, yet residents took it seriously enough to call the city when they spotted "violations." Also, the weather was prompting many cities to call for conservation, yet it was our city's efforts that became aired on the regional television station, which tells us our messages are worded well. In 2010, we're expanding the placement of those messages so that water efficiency becomes a strategic effort of all residents even before hot weather forces them to pay attention.

Do not mail, fax, or email this report to DOH

Annual Water Use Efficiency Performance Report Form

You must submit this report by email.
Save the completed form with your water system's name and email it to WUE@doh.wa.gov by July 1.

Washington State Department of Health
Division of Environmental Health
Office of Drinking Water

General Water System Information:

System Name: City of Sumner

System ID #: 851207

County: Pierce

Your Name: Tony Utanis

Your Title: Operator III

Your email address: tonyu@ci.sumner.wa.us

Your Phone Number: (253) 299-5740 Enter without dashes. Example: 3601234567

Today's Date: 07/07/09 Enter as mm/dd/yy. Example: 01/01/09

Who should we contact if we have questions about this report?

Name: Tony Utanis

Phone Number: (253) 255-6319 Enter without dashes. Example: 3601234567

Meter Installation Information:

Is your water system fully metered? Yes **If Yes, continue to next page.**

If not fully metered:
Current status of meter installation:

Describe efforts to minimize leakage:

Production, Authorized Consumption, and Distribution System Leakage Information:

Reporting Year: 2008

12-Month WUE Reporting Period:

01/01/08 to 12/31/08 Enter as mm/dd/yy. Example: 07/01/08

Incomplete or missing data for the year? Yes

If yes, explain:

One large user, Manke Lumber, had a meter that was not read by the City until July due changes in the distribution system. The consumption for the first 6 months of the year were assumed based on other data and included in the AC category as shown on the attached page.

Distribution System Leakage Summary:	
Total Water Produced and Purchased (TP) – Annual Volume	574,180,000 gallons
Authorized Consumption (AC) – Annual Volume	463,850,000 gallons
Distribution System Leakage – Annual Volume **TP - AC**	110,330,000 gallons
Distribution System Leakage – Percent **DSL = [(TP - AC) / TP] x 100**	19.2 %

Goal Setting Information:

Date of Most Recent Public Forum: 01/07/08 Enter as mm/dd/yy. Example: 10/01/08

Goals must be established through a public process.

Has goal been changed since last annual WUE report? No

Each goal must identify the measurable water savings that will be achieved at a specific time in the future. Identify all water saving goals established by elected governing board.

WUE Goals:

Supply Side Goal (if applicable):

Demand Side Goal (required):

1. Reduce single-family annual average daily water consumption from 283 gallons per day to 260 gallons per day within five years.
2. Reduce the peak monthly average daily flow to no more than twice the base winter average daily flow or 1500 cubic feet per month within five years.
3. Reduce unaccounted hydrant use by 50% within five years.

☐ I don't have this information

Describe Progress in Reaching Goals:

- Estimate how much water you have saved.
- Report progress toward meeting goals within your established timeframe.
- Identify any WUE measures you are currently implementing.

Supply Side Goal Progress:

Demand Side Goal Progress:

1) Residential consumption has decreased from 283 gallons per day per connection in 2005 to 262 gallons per day in 2008. Residential use accounts for between 40% and 45% of the City consumption, so this decrease accounts for an overall decrease of about 3% in the total consumption for the system.
2) The single day peaking factor now averages 1.97, meaning the peak day is less than twice the average day. DOH requires water systems to project peak demand using a 2.0 peaking factor, but the average, which decreased from 2.17 a few years ago, indicates the users are more conscientious of their water use on the hottest and driest days of the summer.

Additional Information Regarding Supply and Demand Side WUE Efforts

- If you established a goal to maintain a historic level (such as maintaining daily consumption at 65 gallons per person per day), you must explain why you are unable to reduce water use below that level.
- Include any other information that describes how you and your customers use water efficiently.

The City has seen a spike in DSL in the past year. After the City recognized the problem, the source meters were checked and the County Springs meter was found to be sending information approximately 50 gpm too high. This accounts for approximately 25 million gallons over the year. Other leaks, unauthorized consumption, and authorized usage that was not metered increased in 2008. The average DSL since 1997 is still under 16% but the City is working diligently to get the three year running average below 10%.

City bills are based on a graduated rate structure for all customer classes. The rates increase with higher usage totals. The typical bills also consumption history on a month-to-month basis over the past year. This shows the water usage for each service so increases or decreases in consumption can be tracked by the property owner.

More educational efforts will be made to educate the public about efficient water usage. The City will also be looking at production and consumption comparisons amounts more frequently this year and in years to come. This will aid in recognizing meter calibration issues and spur leak detection efforts sooner.

To reduce hydrant use by 50% the city will be more diligent with the policy on new construction requiring contractors to have a flow meter hooked to the hydrant that is used to fill and flush new water mains. Also to impose fines on contractors and or companies that remove water from hydrants without a permit or the use of a hydrant flow meter.

For more information, visit our Web at http://www.doh.wa.gov/ehp/dw/programs/wue.htm or contact a regional planner:

Eastern Regional Office—Spokane—Main Office: (509) 456-3115
Southwest Regional Office—Tumwater—Main Office: (360) 236-3030
Northwest Regional Office—Kent—Main Office: (253) 395-6750

Appendix B

Sumner City Council Resolutions Adopting Water Use Efficiency Plans, Goals, and Measures.

- Sumner Regular Council Meeting Minutes from 11/16/09
  - Resolution 1284
  - Agenda Bill 09-106
  - Section 5.4.2.2 to 5.4.3 (pages 5-19 to 5-26) of the City of Sumner's 2009 Water System Plan
- Sumner Regular Council Meeting Minutes from 1/07/08
  - Agenda Bill 08-01
  - Resolution 1232

SUMNER CITY COUNCIL

Minutes - Regular Meeting
November 16, 2009

CALL TO ORDER

The Sumner City Council met in regular session at 7:00 p.m. with Mayor Dave Enslow presiding.

Councilmembers Present: Allsop, Brown, Hannus, Goff, Hynek, Hochstatter and Richardson.

Staff Present: City Administrator John Doan, Deputy City Administrator Diane Supler, City Attorney Brett Vinson, Police Chief John Galle, Public Works Director Bill Pugh, Community Development Director Paul Rogerson, Financial Operations Director Beth Anne Wroe, Human Resources Manager Steve Zamberlin, Communications Director Carmen Palmer and City Clerk Terri Berry.

PRESENTATIONS

Proclaiming Survivors of Suicide Day: Mayor Enslow read a proclamation into the record proclaiming November 21, 2009 Survivor's of suicide Day in the City of Sumner.

Ryan House Plaque Presentation: Human Resources Manager Zamberlin reported that the bronze plaque was taken from the Ryan House. Due to the value of materials normally used to manufacture these plaques, staff researched what material could be used to replace the plaque. It was decided to purchase a laser engraved plastic plaque and it looks great. He presented the plaque to the Ryan House Curator Vickie Connor. Ms. Connor provided a history of the placement of the original plaque. She read the plaque into the record and thanked the City for providing such a beautiful replacement.

CONSENT AGENDA

MOVED BY GOFF, SECONDED BY HANNUS, to approve the consent agenda consisting of: 1) Approval of the minutes of the regular Council meeting of November 2, 2009; 2) Approval of the minutes of the study session of November 9, 2009; 3) Approval of the 2009 business claims in the amount $253,825.01 voucher/warrant nos. 75424-75540; 4) #09-103 Resolution No. 1283: Property Acquisition; and 5) #09-104 2009 Street Striping Project Acceptance. MOTION CARRIED UNANIMOUSLY.

PUBLIC HEARING

2009-2010 Budget Amendment: Deputy City Administrator Supler briefed attendees on the subject of the hearing. She noted that, at the November 9, 2009 City Council Study Session, an update on the City's financial operations through September 30, 2009 was provided along with proposed mid-biennium budget amendments for the 2009-2010 budget. As part of the City of Sumner's overall fiscal planning and management a biennial budget process was adopted in 2008. The 2009-2010 Budget is our first biennial budget. As part of this budget process a mid-biennial review and modification of the biennial budget is required. Ordinance No. 2309 details these proposed amendments for your review and approval. Total proposed amendments will increase total fund appropriations by $772,060. She explained that this is the first reading of the ordinance and it will be on the December 7, 2009 regular Council meeting agenda for adoption. Mayor Enslow opened the public hearing at 7:13 p.m. When no comments were made by the public, Mayor Enslow closed the hearing sat 7:13 p.m. Mayor Enslow noted this has been a tough year for Sumner and the staff have done an admirable job doing more with less. The City opted not to raise taxes at a time when so many were already struggling.

PUBLIC COMMENT

Katharine Rode, 1324 Rainier, spoke to her concern over the lack of sidewalks in her neighborhood. She noted that she and her neighbors are ready to give up the right-of-way necessary for sidewalks.

Mayor Enslow stated there needs to be some discussion on the subject to see what can be done.

Shelly Schlumpf, Sumner Downtown Association (SDA) Executive Director, reported on the success of the living art event in the downtown store windows this weekend. She also reported on the upcoming Bridge Lighting event November 27 and their plans to deal with the challenge of the huge crowd expected; the Santa Parade on December 5; the Christmas Stroll on December 12; and the upcoming community dance. She responded to questions from Council.

NEW/UNFINISHED BUSINESS

#09-102 Ordinance No. 2308 - Setting the 2010 Ad Valorem Property Tax Levy: MOVED BY GOFF, SECONDED BY HYNEK, TO ADOPT ORDINANCE NO. 2308: SETTING THE 2010 AD VALOREM PROPERTY TAX LEVY. Deputy City Administrator Supler reported that the 2009-2010 Final Budget was approved and filed with the City Clerk on December 31, 2008. State statute mandates that the budget process include a mid-biennium adjustment and a public hearing on changes in revenue sources for the coming year's budget, including consideration of any possible increases in property tax revenues. The public hearing on revenues, which was appropriately advertised, provided Sumner citizens with an opportunity to voice their opinions prior to the adoption of the property tax levy and was held on November 2, 2009. The property tax levy, estimated at $935,064 for 2010 is an increase from the 2009 levy. The 2010 levy includes the legally authorized increase of 1% of $37,532 which is a 4.18% increase over last year. The ordinance must be adopted by Council and sent to Pierce County by the November 30 deadline. She noted Sumner still has the lowest property tax rate in the County. UPON ROLL CALL VOTE, THE MOTION CARRIED UNANIMOUSLY.

#09-105 Ordinance No. 2309 - 2009-2010 Biennial Budget Amendment: Deputy City Administrator Supler noted the briefing on this item was provided in the public hearing portion of the meeting and responded to questions from Council. Council accepted the first reading of the ordinance. Second reading will occur at the December 7, 2009 regular Council meeting.

#09-106 Resolution No. 1283: Water System Plan Update: MOVED BY HANNUS, SECONDED BY HOCHSTATTER, TO ADOPT RESOLUTION NO. 1283: WATER SYSTEM PLAN UPDATE. Public Works Director Pugh briefed attendees on the motion. He reported that the City Council last took action on the Water System Plan in 2005 when the Plan was adopted. Staff was planning to submit the Plan to the Washington State Department of Health but ran into concurrency issues with adjoining water purveyors. Modifications to the water service area boundaries had to be made to address boundary discrepancies and conform to interlocal agreements. Changes and updates were also made in the system inventory, demand history and projections, water rights, water quality, water use efficiency and capital improvement plan portions of the plan. It's appropriate that the Council adopt the Water System Plan including these updates, so staff can submit the Plan to the Washington State Department of Health and Department of Ecology. The revised 2009 Water System Plan is fully supportive and consistent with a Water Right Permit Application we have submitted to the Department of Ecology. UPON ROLL CALL VOTE, THE MOTION CARRIED UNANIMOUSLY.

MAYOR COMMENTS

Mayor Enslow noted that, following reports on tonight's agenda, the Council will have short discussion on Calvary and then will go into executive session on an unrelated matter.

COUNCIL COMMENTS

Councilmember Goff reported that he joined the school for their Veteran's Day event; attended the City of Auburn Veteran's parade; worked with volunteers to take down corn stalks; attended the DUI Victim's Panel recognition ceremony where officer Matt Kurle was recognized for his work on the task force; announced he will be attending the EPFR Commission meeting if any of the Council have

matters they would like him to bring to their attention; reported that the community garden has provided tons of food to the food bank; and encouraged citizens to attend the pancake feed to be held at the fire department on December 5 at 7 a.m.

Councilmember Hynek reported that the community garden contributed over 25,000 pounds of fresh vegetables to the local food banks. He spoke to his concern over the contributing factors to the high increases in health insurance rates the City and community are paying.

Councilmember Brown noted the food bank will always except food and money donations and thanked the community garden participants for their contributions. He noted that Top Foods donated a lot of food recently as well.

Councilmember Richardson noted he will attend PCRC meeting on Thursday where he will be elected as chair of the PCRC or possibly re-elected to his current position as vice chair. Either way, it will be a good thing for Sumner.

Councilmember Hannus thanked those who took the time and interest to vote in the election and wished all a blessed Thanksgiving.

CITY ADMINISTRATOR REPORT

City Administrator Doan noted the WASPC conference will be attended by several staff members where they will accept Sumner's Police Department accreditation. This is great thing for Sumner. He will brief more at the next Council meeting. He reported that Sumner's pairing with the City of Prosser received an honorable mention in the Association of Washington Cities (AWC) Municipal Excellence Awards.

CLOSED SESSION

Continued quasi-judicial deliberations on Calvary Church Conditional Use Permit Appeal: City Administrator Doan noted that, at the last Council meeting, there was some follow up asked of staff. Staff is asking for the deliberations to be postponed to the December 7, 2009 Council meeting to allow staff the time to finalize their efforts. City Attorney Vinson briefed attendees on the process for this matter, the possible actions that can be taken by Council, what must be done once that action is taken and the prohibitions on the Council regarding exparte communications in this type of proceeding. MOVED BY HYNEK, SECONDED HOCHSTATTER, TO POSTPONE DELIBERATION TO THE DECEMBER 7, 2009 REGULAR COUNCIL MEETING. UPON ROLL CALL VOTE, THE MOTION CARRIED UNANIMOUSLY.

EXECUTIVE SESSION

Mayor Enslow recessed the meeting into executive session at 8:00 p.m. for a period not to exceed twenty (20) minutes for the purpose of considering the minimum price at which real estate will be offered for sale or lease in accordance with RCW 42.30.110(1)(c).

Mayor Enslow reconvened the meeting at 8:20 p.m.

ADJOURNMENT

When there was no further business to come before the Council, Mayor Enslow adjourned the meeting at 8:21 p.m.

Attest:

Terri Berry, CMC, City Clerk

Mayor David L. Enslow

RESOLUTION NO. 1284
CITY OF SUMNER, WASHINGTON

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF SUMNER, WASHINGTON, ADOPTING THE 2009 WATER SYSTEM PLAN

WHEREAS, the Water System Plan was initially adopted in 2005; and

WHEREAS, an updated Plan is necessary to address concurrency issues with neighboring water purveyors and conform to existing interlocal agreements; and

WHEREAS, the updated Plan addresses the system inventory, demand history and projections, water rights, water quality, water use efficiency and capital improvements; and

WHEREAS, the Plan will be submitted to the Washington State Department of Health and the Department of Ecology.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF SUMNER, WASHINGTON, AS FOLLOWS:

Section 1. The City Council does hereby adopt the City of Sumner 2009 Water System Plan.

APPROVED AND ADOPTED this 16th day of November, 2009.

Mayor Dave Enslow

ATTEST:

City Clerk Terri Berry, CMC

APPROVED AS TO FORM:

City Attorney Brett Vinson

SUMNER CITY COUNCIL MEETING

November 16, 2009 – 7:00 p.m.
Sumner City Hall – 1104 Maple Street
Council Chambers

CALL TO ORDER

Pledge of Allegiance
Invocation: Steve Starr, Sumner Presbyterian
Roll Call: Allsop, Brown, Goff, Hannus, Hochstatter, Hynek and Richardson

PRESENTATION: 1) Proclaiming Survivors of Suicide Day
2) Ryan House Plaque Presentation

CONSENT AGENDA

1. Approval of the minutes of the regular Council meeting of November 2, 2009
2. Approval of the minutes of the study session of November 9, 2009
3. Approval of the 2009 business claims in the amount $253,825.01 voucher/warrant nos. 75424-75540
4. #09-103 Resolution No. 1283: Property Acquisition
5. #09-104 2009 Street Striping Project Acceptance *(Public Works Committee do pass)*

PUBLIC HEARING: 2009-2010 Biennial Budget Amendment

REGULAR BUSINESS

1. Public Comment *(Limit 5 minutes)*

2. Unfinished and/or New Business

   a. #09-102 Ordinance No. 2308: Setting the 2010 Ad Valorem Property Tax Levy *(11-02-09 First Reading)*
   b. ~~#09-105 Ordinance No. 2309: 2009-2010 Biennial Budget Amendment (Study Session Review)~~
   c. #09-106 Resolution No. 1283: Water System Plan Update *(Public Works Committee do pass)*

3. Reports

   a. Mayor
   b. City Administrator

4. Council/Mayor Comments

5. Continued quasi-judicial deliberations on Calvary Church Conditional Use Permit Appeal to be held in closed session.

6. Executive Session: To consider the minimum price at which real estate will be offered for sale or lease in accordance with RCW 42.30.110(1)(c).

7. Adjournment

This meeting is accessible to persons with disabilities. For individuals who may require special accommodations, please contact the City Clerk at (253) 299-5500, 24 hours in advance.

MEETING DATE: 11/16/2009 **ITEM#** 09-106

CITY OF SUMNER
City Council
AGENDA BILL

SUBJECT: 2009 Water System Plan

CATEGORY:

- ☐ **CONSENT**
- ☒ **RESOLUTION**
- ☐ **MOTION**
- ☐ **ORDINANCE**
- ☐ **PUBLIC HEARING**
- ☐ **OTHER**

BUDGET IMPACT: None

Amount Budgeted: $
Expenditure Amt.: $
Contingency Req'd: $

ATTACHMENTS: Resolution No. 1283: 2009 Water System Plan, Summary of Changes

STAFF CONTACT: Public Works Director Bill Pugh

SUMMARY/BACKGROUND: The City Council last took action on the Water System Plan in 2005 when the Plan was adopted. Staff was planning to submit the Plan to the Washington State Department of Health, but ran into concurrency issues with adjoining water purveyors. We had to modify water service area boundaries to address boundary discrepancies and conform to interlocal agreements. We have also made changes and updates in the system inventory, demand history and projections, water rights, water quality, water use efficiency and capital improvement plan portions of the plan. It's appropriate that the Council adopt the Water System Plan including these updates, so we can submit the Plan to the Washington State Department of Health and Department of Ecology. The revised 2009 Water System Plan is fully supportive and consistent with a Water Right Permit Application we have submitted to the Department of Ecology.

COUNCIL COMMITTEE RECOMMENDATION: Public Works Committee do pass recommendation, October 13, 2009. The City Council also reviewed the proposed plan at their October 26, 2009 Study Session.

STAFF RECOMMENDATION: Adopt Resolution No. 1284: adopting the 2009 Water System Plan

(BELOW TO BE COMPLETED BY CITY CLERKS OFFICE)

COUNCIL ACTION:
- ☐ APPROVED
- ☐ DENIED
- ☐ TABLED/DEFERRED/NO ACTION
- ☐ MOVED TO SECOND READING *(ordinances only)*

COUNCIL BILL #	09-106
1ST reading	
Enactment reading	11-16-09
ORDINANCE #	
RESOLUTION #	1284

Summary of Changes
Sumner's Water System Plan
2005 to 2009

Service Area modification – boundary discrepancies and interlocal agreements with adjacent water purveyors

Updated water system storage descriptions to include Sumner Viewpoint Tank

Updated water production and consumption history from 2005 to 2009

Updated the water demand projections based on consumption history and new population projections

Revised the City's existing water rights accounts and descriptions

West Well rights in question

Decreased water right at the **Dieringer Well** – 250 gpm to 95 gpm

Revised the water quality and reporting requirements

Revised the City's Water Use Efficiency program to reflect new goals, additional measures to save water and revised water demand savings

Updated the City's hydraulic analysis to incorporate changes in existing infrastructure

Revised the capital improvement project cost estimates and proposed schedules

Updated the financial plan chapter based on current information

Updated the City's SEPA checklist for the 2009 Water System Plan

5.4.2.2 Water Conservation Program

Water conservation programs are composed of demand-side strategies and supply-side strategies. Demand-side strategies are those that lessen demand (e.g., a showerhead and toilet retrofit program). Supply-side strategies are those that supply demand from an alternative source or improve system efficiency, but in which demand is not actually reduced (e.g., water reuse and use of nonpotable water sources—including exempt wells—satisfies existing demand with an alternative source). Both strategies allow water systems the ability to supply more users with a fixed amount of supply.

Water-demand management includes the implementation of comprehensive long-term conservation programs, short-term emergency response plans, and peak-use management. In considering measures in a demand-side strategy for water conservation, it is necessary to distinguish a permanent reduction in average-per-capita demand from a temporary reduction in demand resulting from short-term or mandatory measures. Short-term regulatory or mandatory measures more associated with drought or other emergency conditions of water shortage are not considered elements of conservation. Instead, these conditions are elements of an emergency response plan that result in reduced use and a corresponding reduction in service by the public water system.

Peak-flow management, such as use of impoundments to capture excess flows for supply use, or operational programs, such as every-other-day lawn watering, can be an integral measure of an emergency-response plan, a conservation plan, or a supply strategy.

The City set forth goals in a public forum before the City Council that are listed in Section 5.4.2.3. Other measures the City is considering implementing in the coming years are as follows:

1. The City will consider providing cash rebates for residential, commercial, and/or industrial customers purchasing new high-efficiency toilets/urinals and clothes washers.

   Research states ultra-low-flow (ULF) and high-efficiency toilets reduce water consumption by approximately 2.5 gallons per flush (gpf), saving an estimated 9 gallons per capita per day. Using an estimate of 50 percent implementation among Sumner's population during the 20-year planning period, this equates to an average demand reduction of over 30 gpm, or 16.4 million gallons per year. This represents a reduction of about 2.62 percent of Sumner's 2009 ADD (2009 ADD is ~1.71 mgd).

   Other Municipalities, such as Pullman, Seattle, and Kent, have rebate programs for low-flow and high-efficiency toilets with incentives ranging from $50 to $150. Cascade Water Alliance (CWA) also offers $100 rebates for new residential customer purchases of low-flow toilets labeled as, "WaterSense." WaterSense is the water efficiency equivalent to EnergyStar for energy savings among household appliances.

   WashWise

   Many local municipalities and water distributing authorities are offering rebates for high-efficiency clothes washers and toilets through the WashWise Rebate Program. These organizations include: PSE, CWA, City of Bonney Lake, Tacoma Water, City of Renton, etc. Basically, WashWise processes the rebates and distributes the funds for the program, and municipalities or other organizations in the program pay WashWise a process fee on a per unit basis.

There are three tiers of rebates that range from $50 to $100 based on the annual water savings for the new appliance. The three tiers are as follows: $50 rebate for an appliance that saves an average of 5,962 gallons/year; $75 for an appliance that saves an average of 7,693 gallons/year; and $100 for an appliance that saves and average of 9,433 gallons per year.

The City of Sumner will further explore their potential participation in the WashWise program in 2010.

2. The City will consider implementing a program that would grant participants free fixtures or discounts on purchases of faucet aerators, low-flow showerheads, and toilet displacement devices.

   Faucet aerators reduce flow and the cost is relatively cheap ($0.33 to $1.39 each). The effectiveness in reducing overall consumption has not been researched enough to make any assumptions on the total or even per capita water demand reduction.

   Research states low-flow showerheads can reduce average consumption from over 5 gpm to 2.5 gpm, and eventually saving approximately 5.5 gpd per installation. If Sumner has 3,100 residential connections, and half participate with 1.5 showerheads per participant, that equals 2,325 showerheads. If each showerhead saves 5.5 gpd, there is potentially almost 13,000 gpd savings. This represents a reduction of about 0.74 percent of Sumner's 2009 ADD. Low-flow showerhead kits cost approximately $2 each.

   Toilet displacement devices can save 4.2 gpd per installation. However, any savings is contingent on proper installation and no increase in the average number of flushes per day. Once again, research has not determined how effective these devices are because there is a relatively high rate of removal, and toilet design often is not compatible with less flow, leading to double-flushing, which negates any savings.

3. Sumner will internally discuss landscaping and irrigation practices with the Parks department, including the cemetery staff. The City will consider additional equipment purchases and installation of moisture sensors, timers, weather stations, etc. to reduce consumption during peak periods.

   Improving efficiency of irrigation for landscaping can decrease water demand during the peak consumption periods and directly aid the City during the toughest times for the water system. Research states that moisture sensors, that can be set up to automatically adjust irrigation controllers, can save an average of 5 to 10 percent in overall outdoor use when used in conjunction with a conventional watering timer. It is unknown how much of Sumner's water use is for outdoor landscaping, so estimates for total reduction cannot be made. The cost for moisture sensors and tensiometers is between $35 and $125, and the total lifecycle costs, including replacement and repair, is approximately $270 per each installation.

   Large landscaping areas can see significant reduction in water consumption after equipment upgrades, timer adjustment, leak repair, and operator training. Research states reduction can be as much as 50 percent after these changes are made. When extra devices, such as rain shut-off switches and wireless connections to weather/irrigation information systems are added, costs can be significantly higher than other WUE measures. Research recommends that landscaping areas over 2 acres get evaluated for potential upgrades, as it can cost several hundred to several thousand dollars to implement effective changes to large landscaping/irrigation areas, depending on the options available.

4. The City will adopt language in their code that gives the City authority to fine people for illegal hydrant use or even metered hydrant use that is not reported on a monthly basis to the City. This will likely be similar to the policy of the City of Puyallup, but details for the code revision will be completed in early 2010.

   City of Tacoma charges a $1,000 fine for using a fire hydrant without a permit. The permit cost is $100, and the meter deposit is an additional $1,000. Deposits are returned after meter readings and payment for water is made.

   City of Puyallup charges a permit fee of $25 for hydrant use. A deposit for the meter is an additional $1,000 for a 3-inch meter or $300 for a 3/4-inch meter. There is a flat fee of $200 for water usage if hydrant meters are not brought to the City for a "check-up" to read the meter bimonthly and meters are then revoked.

5. In addition to the fines, Sumner will consider implementing a program to install hydrant locks which would prevent illegal connections at problem locations.

   Hydrant locks can cost in the area of $100 to $175. This is a significant investment considering Sumner has approximately 900 hydrants, but would likely only install locks on 50 to 100 of the highest theft risk hydrants. Potentially, this program could be somewhat self-sustaining if the money collected from fines described in item #4 were directly funneled into investing in hydrant locks. Also, the City will have to coordinate any changes to the hydrants with East Pierce Fire and Rescue.

6. An inherent goal of the WUE program is reducing the 3-year running average DSL to 10 percent or less. The City would like to take the first step in doing this by reducing a single-year DSL to 10 percent or less within 3 years.

   The City already has a leak detection program, but expanding the program may be an investment to consider. Other ways of reducing DSL, such as reducing the system pressure, loss from evaporation, and accounting errors are not feasible or have already been addressed. The City needs to continue to research and implement the most effective measures based on their existing customers and sources or DSL.

   Table 5-5 is a summary of the additional measures described above with an anticipated savings and cost.

Table 5-5. Projected Demand Reduction and Costs of Additional WUE Measures

Measure	ADD Demand Reduction[a] (%)	Approximate Cost/Each ($)	Approximate Total Cost ($)
1) Toilets and Clothes Washers – WashWise[b]	~3.00%	$34	$51,000
2) Faucet Aerators, Showerheads, and Toilet Displacement[c]	~0.75%	$5	$35,000
3) Landscaping[c]	~1.50%	$270	$27,000
4) Fees and Fines[d]	~0.75%	-$500	-$50,000
5) Hydrant Locks[e]	~1.00%	$125	$37,500
Total	**~7.00%**		**~$100,500**

[a] Based on estimated 2009 ADD of 1.71 mgd.

[b] Assumes 50 percent of Sumner's residential population will implement this measure.

[c] Based on 100 landscaping areas.

[d] Based on 100 fees and fines averaging $100/each.

[e] Based on the installation of 300 hydrant locks.

With the City's continuing educational efforts and other existing measures, this projected demand reduction presents a conservative estimate of the total demand reduction from the City's WUE program. These measures will also need time to be implemented and utilized by Sumner's residential, commercial, and industrial customers, so the reduction will not be realized for quite some time.

5.4.2.3 Goals

City of Sumner Resolution number 1232, in Appendix R, established initial goals for the City's WUE program on January 7th, 2008. These goals included:

1. Reduce single-family annual average daily water consumption from 283 gallons per day (2005 Comprehensive Plan) to 260 gallons per day within five years.

2. Reduce the peak monthly average daily flow to no more than twice the base winter average daily flow or 1500 cubic feet per month within 5 years.

3. Reduce unaccounted hydrant use by 50 percent within five years.

This plan represents the City's adoption of the following goals, replacing the goals listed above:

1. Reduce the 3-year running average DSL to 10 percent or less by 2016.

2. Reduce single-family annual average daily water consumption from 262 gallons per day to 250 gallons per day by 2014.

3. Decrease demand by 7 percent per ERU within the 20-year planning period.

5.4.2.4 Cost-Effectiveness Evaluation

The WUE Program requires evaluation or implementation of WUE measures. Each measure evaluated must consider the following three perspectives:

1. Water System Perspective: This evaluation looks to see if the measure is cost-effective for the water system.

2. Cost-Sharing Perspective: This evaluation looks to see if the measure is cost-effective if the implementation costs are shared with other nearby entities.

3. Societal Perspective: This evaluation looks to see if the measure is cost-effective if all the costs and benefits are included.

The City of Sumner had over 3,600 connections in 2008. This number of connections requires the City to evaluate or implement six (6) WUE measures. Any measure that is implemented, the WUE Guidebook states, does not have to be evaluated for cost-effectiveness.

Sumner is required to implement or evaluate six measures, and the following section describes two measures that cover four customer classes each; meaning the City has implemented eight measures. Therefore, no other measures will be evaluated for cost-effectiveness.

5.4.2.5 Implementation

The following WUE measures are mandatory:

1. Install production (source) meters (WAC 246-290-496[1]).
2. Install consumption (service) meters (WAC 246-290-496[2]).
3. Perform meter calibration (WAC 246-290-496[3]).
4. Implement a water loss control action plan (WLCAP) to control leakage (WAC 246-290-820[4]).
5. Educate customers about water use efficiency practices (WAC 246-290-810[4][f]).

Because these measures are mandatory, they cannot be counted as one of the six minimum evaluated or implemented measures under WAC 246-290-810(4)(d)(i). All of the above measures have been implemented, including the WLCAP (as discussed in Section 3.4.1) and education efforts (described in the following section).

Below are the measures that have been implemented for all customer classes. There are four customer classes that the City distinguishes, meaning the following measures each count for four measures towards the City's WUE Program goals. The customer classes are residential, commercial, industrial, and other. The "other" class includes schools, churches, motels/hotels, and multifamily connections.

1. Conservation rates – Conservation rate structures are set up for all customer classes in Sumner Municipal Code 13.24.300. The rates are changed on a yearly basis based on the CPI-U Index for the Seattle-Puget Sound area. The thresholds for the graduated rates remain the same, lowest rate for consumption up to 1,000 cubic feet per month, increased rate for water used between 1,000 and 2,000 cubic feet per month, and the highest rate for water used in excess of 2,000 cubic feet per month.
2. Water bill showing consumption history – The City's current water bills show customer consumption history over the past year on a month-to-month basis.

As stated in Section 5.4.2.2, there are several other goals/measures that the City will evaluate and consider implementing in the future. Below are educational efforts the City will promote in the coming years.

5.4.2.6 Education

The following sections describe the City's educational programs separated by target customer class.

All Customer Classes
Publicize the need for water conservation through television and radio public-service announcements, news articles, public-water-systems bill inserts, or other means. This includes promoting efficient indoor and outdoor water usage; distribution of Ecology/Health conservation brochures or other printed material informing customers, builders, and contractors of new plumbing code regulations requiring efficient plumbing fixtures; and other efforts.

Industrial and Commercial Customer Classes
Provide assistance to wholesale suppliers that will aid wholesale customers to develop and implement conservation programs tailored to their needs, and provide assistance to wholesale suppliers that will help them carry out their own conservation programs.

Nurseries/Agriculture Customers
Encourage the application of current water-conservation techniques for large agriculture/irrigation operations. Examples include nurseries and commercial agriculture. Moisture sensors, flow timers, low-volume sprinklers, drip irrigation, weather monitoring, and other practices to increase irrigation efficiency could be installed.

Landscape Management/Playfields – Xeriscaping
Promote low-water-demand landscaping in all retail customer classes (private, public, commercial, industrial, etc.). Work with local nurseries to ensure the availability of plants that achieve this objective.

Table 5-5 (page 5-21) shows the City's required and WUE program measures.

5.4.2.7 Estimated Water Savings

The projected water savings from the City's WUE program can be attributed to goal setting and implementation of the education and other efforts described above. The City has decreased the single-family annual average daily water consumption from 283 gallons per day (2005) to approximately 262 gallons per day through 2008. This represents an approximate 3 percent decrease in total consumption for the Sumner water system (this is a per capita comparison, which does not take the City's population growth into account).

The demand forecasts shown previously in this chapter assume no projected water savings from WUE program measures. Over the coming years, the goals and measures the City will continue to implement are the basis for projected water savings described in Section 5.4.3.

5.4.2.8 Measure Effectiveness

The goal of the WUE program is to measure water production and consumption and to use this information to track reduction in the demands in the system. Reduction of water demand will be aided by the WUE program measures.

The water use production and consumption demands have and will continue to be tracked over the coming years. These demands will be looked at on a quarterly basis to help evaluate the effectiveness of the WUE program and help with future projections of the water system.

The Annual Water Use Efficiency Performance Reports, due to DOH each calendar year, summarize water produced, billed, and the resulting DSL. This information will be analyzed to track progress toward the WUE program goals within the planning period. The 2009 Annual Water Use Efficiency Performance Report is shown in Appendix R.

5.4.3 Water Use Savings Projections

Water usage for a single-family residence in Sumner averages 226 gpd, not accounting for DSL within the system between the source and the service connection. To be conservative, it is assumed that Water Use Efficiency efforts by the City of Sumner will result in a 7 percent decrease in total gallons per ERU during the 20-year planning period. These savings are shown in Table 5-6 (page 5-25).

Table 5-6. Evaluation of WUE Measures

	Benefits			Costs			Level of Implementation			Year of Implementation[a,b]
	Low	Moderate	High	Low	Moderate	High	Low	Moderate	High	
Required Measures										
Production Meter Installation		X			X				X	–
Service Meter Installation (and schedule)		X			X				X	–
Collect Production/Consumption Data and Forecast Demands		X			X				X	–
WUE Program in Planning Document		X			X			X		2009
Meet DSL Standard /Implement WLCAP		X			X			X		2009
Set WUE Goals		X		X				X		–
Submit Annual Performance Report		X			X			X		–
WUE Program Measures (Implemented)										
Education		X			X			X		2009
Bill Showing Consumption History		X			X			X		–
Conservation Pricing			X	X			X			–
Reclaimed Water			X			X		X		#

[a] "–" indicates conservation measures already in effect.

[b] "#" indicates conservation measures not being implemented by the City of Sumner.

Table 5-7. Projected Demands with WUE Program Savings[a]

Year	Average Daily Demand (ADD) (mgd)	Maximum Day Demand (MDD) (mgd)	WUE Program Savings (%)
2008[b]	1.57	3.14	–
2009	1.68	3.36	2.00
2010	1.74	3.48	2.25
2011	1.80	3.60	2.50
2012	1.86	3.72	2.75
2013	1.91	3.82	3.00
2014	1.96	3.92	3.25
2019	2.20	4.40	4.50
2024	2.39	4.78	5.75
2029	2.56	5.12	7.00

a The ADD and MDD values shown here are presented to demonstrate how implementation of small conservation measures can affect total system consumption. These conservation savings are theoretical and should not be used for planning purposes.

b The actual ADD and MDD for 2008 are shown here as a baseline for the projected WUE savings.

5.5 WATER RECLAMATION

The Municipal Water Supply – Efficiency Requirements Act, Chapter 5, Laws of 2003 (Municipal Water Law), amended Chapter 90.46 of the RCW to require public water systems serving 1,000 or more connections to evaluate opportunities for reclaimed water when completing their Water System Plan (WSP). Municipal Water Law Attachment 9: Water Reclamation Checklist for Systems with 1,000 or More Connections for the City of Sumner outlines potential reclaimed water annual use, including estimated annual savings to the City. Attachment 9 is included in Appendix N of this Plan.

Expansion and water quality improvements to the Sumner wastewater treatment facility were recently completed. The plant provides enhanced secondary treatment with nitrification/denitrification capabilities and was designed to allow construction of a future effluent filtration process as funding allows. The effluent filter process will be designed and built to meet water reuse criteria as established by the Washington State Department of Ecology. The water reuse facility is sized to treat 3.0 mgd. Rotary cloth and/or membrane filters will be used. Initially, there will be only enough rotary discs to treat an average daily flow of 1.5 mgd. In time, as needed, additional filter units will be installed to increase the capacity to 3.0 mgd. The filter unit frames, flocculation tank, piping, and chemical feed will be sized initially to treat 3.0 mgd. Construction of the effluent filtration plant alone will not enable the City to produce Class A reuse water from the WWTP until a new UV disinfection system is constructed.

The effluent filter plant serves two general purposes.

- To enhance the quality of the effluent.
- Provide summer irrigation water, in the form of reclaimed water, in lieu of using potable water and surface water rights.

The 50-acre cemetery site has a water right for 100 acre-feet of annual consumption for irrigation of the cemetery property. The West Well presently primarily serves the cemetery. This water right could be better used for general municipal use. With the construction of approximately 9,300 feet of 4-inch force main from the WWTP to the cemetery, the cemetery may be irrigated with reuse water. The development of directional boring has made this a feasible scenario. A 4-inch high-density polyethylene line may be bored under the rivers and SR 167 in a fairly direct line to the cemetery.

SUMNER CITY COUNCIL

Minutes - Regular Meeting
January 7, 2008

CALL TO ORDER

The Sumner City Council met in regular session at 7:02 p.m. with Mayor David Enslow presiding.

Judge Steve Shelton administered the oath of office to Councilmembers Hochstatter, Brown, Richardson and Goff.

Councilmembers Present: Allsop, Brown, Goff, Hannus, Hochstatter, Hynek and Richardson.

Staff Present: Deputy City Administrator Diane Supler, City Attorney Brett Vinson, Public Works Director Bill Shoemaker, Community Development Director Paul Rogerson, City Engineer Mike Dahlem, Communications Director Carmen Palmer, Police Chief John Galle, Fire Chief Dan Packer, and City Clerk Terri Berry.

CONSENT AGENDA

MOVED BY RICHARDSON, SECONDED BY GOFF, to approve the Consent Agenda consisting of: 1) Approval of the minutes of the regular Council meeting of December 17, 2007; 2) Approval of the 2007 business claims in the amount $384,696.66 of voucher/warrant nos. 69543-69666; 3) Approval of the 2008 business claims in the amount $441,868.31 of voucher/warrant nos. 69667-69686; and 4) Resolution No. 1233: Jail Services Contract with the City of Fife. Deputy Mayor Goff noted the City of Fife jail contract received a do pass recommendation from the Public Safety Committee. MOTION CARRIED UNANIMOUSLY.

PUBLIC HEARING

Water Use Efficiency Goals: Public Works Director Shoemaker briefed attendees on the item. Mayor Enslow opened the public hearing at 7:18 p.m.

Pete Hochstatter, 15324 63rd Street Court East, asked about what appeared to be a remote control meter reader that was installed on his home's meter. Public Works Director Shoemaker explained that new meters are being installed at a rate of about 700 per year.

Mayor Enslow closed the hearing at 7:22 p.m.

PUBLIC COMMENT

Mary Lou Tkach, 7703 146th Avenue Court East, thanked the Council for their efforts to lead the Puyallup River project. She noted the residents would appreciate continued communication with the City and invited Council to visit the area of concern. She stated they are very willing to work with the City on the project.

Mayor Enslow clarified the City's role and the efforts being made in support of the project to deal with the flooding issue. Councilmember Richardson noted a meeting will be set up for early February to bring the various elected officials and representatives together to work on a solution. Councilmember Allsop noted the group is welcome at all City meetings and concurred that communication is key. Councilmember Hynek stated the City is working on some temporary flood control measures.

REGULAR BUSINESS

Election of Deputy Mayor: Mayor Enslow opened the floor to nominations for Deputy Mayor. Councilmember Hannus nominated Councilmember Goff. Councilmember Allsop seconded the

nomination. UPON ROLL CALL VOTE, COUNCILMEMBER GOFF WAS UNANIMOUSLY RE-ELECTED DEPUTY MAYOR.

Council Committee Assignments: Mayor Enslow briefed attendees on the process for Committee assignments and discussed the commitment Councilmembers are making by their choices to serve. The Council selected their committees based on a seniority system. The following are the 2008-2009 committee assignments:

CD/Parks: Allsop, Hochstatter, Hynek, Alt. Goff
Finance/Personnel: Brown, Hynek, Richardson, Alt. Goff
Public Safety: Brown, Goff, Hannus, Alt. Allsop
Public Works: Hannus, Hochstatter, Richardson, Alt. Brown

Mayor Enslow requested Committee members caucus as soon as possible to elect their chairs and inform the Clerk.

#08-01 Resolution No. 1232: Establishing Water Use Efficiency Goals: MOVED BY HANNUS, SECONDED GOFF, TO ADOPT RESOLUTION NO. 1232 – ESTABLISHING WATER USE EFFICIENCY GOALS. Public Works Director Shoemaker briefed attendees on the motion. UPON ROLL CALL VOTE, THE MOTION CARRIED UNANIMOUSLY.

COMMITTEE REPORTS

Council consensus was to have Committee meeting dates, times and locations remain on the current schedule, with the exception of the Finance Committee who will meet at 5 p.m. on January 22 in the main conference room, and any deviation from that schedule be discussed at the committees' next meeting.

Deputy Mayor Goff shared the recent Police activity statistics.

Councilmember Richardson, noted the next PCRC meeting will be held on January 25 at the Pierce County annex. He stated that he believes the ecology block proposal for the Puyallup River flood control project looks like the most feasible. That recommendation will go to the task force meeting in the first week of February and then will come to Council for consideration.

Mayor Enslow noted that the storage facility that had graciously offered to store the float barn has been determined to be inadequate for this purpose. There is research being done on other proposals.

COUNCIL COMMENTS

Councilmember Goff noted the next Public Safety Committee meeting is scheduled for January 17, at which time they will decide on chair, date, time and location of meetings. He thanked staff for installing devices to discourage skateboarding in the wrong areas of the park.

Councilmember Hynek noted his goal to better himself as a Councilmember in 2008 and welcomed Councilmember Hochstatter to the Council.

Councilmember Brown welcomed new Councilmember Hochstatter and wished all a happy new year.

Councilmember Hochstatter thanked citizens for their support in the recent election.

Councilmember Richardson welcomed Councilmember Hochstatter to the dais.

Councilmember Hannus wished all a happy new year.

Councilmember Allsop welcomed Councilmember Hochstatter and noted he is pleased to have a person with many great ideas at the dais.

Mayor Enslow welcomed Councilmember Hochstatter to the Council and wished all a happy new year.

EXECUTIVE SESSION

Mayor Enslow recessed the meeting into executive session at 7:57 p.m. for a period not to exceed twenty minutes to discuss potential litigation. He noted no action would be taken in executive session or to follow.

Mayor Enslow reconvened the meeting at 8:15 p.m.

ADJOURNMENT

When there was no further business to come before the Council, Mayor Enslow adjourned the meeting at 8:15 p.m.

Terri Berry, CMC, City Clerk

Attest:

Mayor David L. Enslow

RESOLUTION NO. 1232
CITY OF SUMNER, WASHINGTON

A RESOLUTION OF THE CITY OF SUMNER, WASHINGTON, ESTABLISHING WATER USE EFFICIENCY GOALS AS REQUIRED BY THE WATER USE EFFICIENCY RULE PROMULGATED BY THE STATE DEPARTMENT OF HEALTH AS SET FORTH IN WAC 246-290-830.

WHEREAS, the City's Water Comprehensive Plan, dated March, 2005 sets forth a Water Conservation Program that it follows; and

WHEREAS, the City's Water Utility strives to provide high quality potable water to adequately meet the needs of the community; and

WHEREAS, the City's Water Utility makes good effort to assure that water is not wasted.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF SUMNER, WASHINGTON DOES RESOLVE AS FOLLOWS:

Section 1. The Mayor and City Council for the City of Sumner adopt the following goals to effectively and efficiently use the water resources of the City:

1. Reduce single-family annual average daily water consumption from 283 gallons per day (2005 Comprehensive Plan) to 260 gallons per day within five years.

2. Reduce the peak monthly average daily flow to no more than twice the base winter average daily flow or 1500 cubic feet per month within 5 years.

3. Reduce unaccounted hydrant use by 50% within five years.

APPROVED AND ADOPTED this 7th day of January 2008.

Dave Enslow
Mayor Dave Enslow

ATTEST:

Terri Berry
Terri Berry, CMC, City Clerk

APPROVED AS TO FORM:

Brett Vinson, City Attorney

SUMNER CITY COUNCIL MEETING

January 7, 2008 – 7:00 p.m.
Sumner City Hall – 1104 Maple Street
Council Chambers

CALL TO ORDER

Invocation: Joe Hibbard, Sumner Presbyterian Church
Pledge of Allegiance

COUNCILMEMBER SWEARING IN

Roll Call: Allsop, Brown, Goff, Hannus, Hynek, Hochstatter and Richardson

CONSENT AGENDA

1. Approval of the minutes of the regular Council meeting of December 17, 2007
2. Approval of the 2007 business claims in the amount $384,696.66 of voucher/warrant nos. 69543-69666
3. Approval of the 2008 business claims in the amount $441,868.31 of voucher/warrant nos. 69667-69686
4. Resolution No. 1233: Jail Services Contract with the City of Fife *(Committee Do Pass)*

PUBLIC HEARING: Water Use Efficiency Goals

REGULAR BUSINESS

1. Public Comment *(Limit 5 minutes)*

2. Unfinished and/or New Business
   a. Election of Deputy Mayor
   b. Council Committee Assignments
   c. #08-01 Resolution No. 1232: Establishing Water Use Efficiency Goals *(Committee Do Pass)*

3. Reports
   a. Committees
   b. Mayor/City Administrator

4. Council/Mayor Comments

5. Executive Session

6. Reconvene

7. Adjournment

This meeting is accessible to persons with disabilities. For individuals who may require special accommodations, please contact the City Clerk at (253) 299-5500, 24 hours in advance.

PUBLIC HEARING NOTICE
CITY OF SUMNER

NOTICE IS HEREBY GIVEN that the City of Sumner City Council will be conducting a public hearing regarding the setting of water use efficiency goals in accordance with the requirements established in the Water Use Efficiency Rule. The hearing will commence at approximately 7:00 p.m. on Monday, January 7, 2008, in the Council Chambers located at 1104 Maple Street, Sumner, WA. Rate Payers of the Sumner Water Utility are invited to respond orally or with written comments during the hearing.

Dated this 19th day of December, 2007
Published December 21, 2007

Terri Berry

City Clerk Terri Berry

MEETING DATE: 01/07/08 **ITEM#** 08-01

CITY OF SUMNER
City Council
AGENDA BILL

SUBJECT: Water Use Efficiency Rule Goal Setting

CATEGORY:

- ☐ **CONSENT**
- ☒ **RESOLUTION**
- ☐ **MOTION**
- ☐ **ORDINANCE**
- ☒ **PUBLIC HEARING**
- ☐ **OTHER**

BUDGET IMPACT: None

Amount Budgeted:	$None
Expenditure Amt.:	$None
Contingency Req'd:	$None

ATTACHMENTS: Resolution No. 1232

STAFF CONTACT: Public Works Director William J. Shoemaker

SUMMARY/BACKGROUND: The Water Use Efficiency Rule required under the Municipal Water Conservation Act of 2003 became effective on January 22, 2007. Under this rule promulgated by the State Department of Health, municipal water suppliers must set water efficiency goals through a public process within one year and report annually on their performance to customers, the DOH and the general public.

Sumner established conservation measures as a part of the Water Comprehensive Plan of March, 2005. Sumner's Water Utility: 1) does meter all services and all sources; 2) has a program to meter water used for construction purposes; 3) has a leak detection program that checks the entire system over a three-year cycle; 4) has a progressive rate structure to discourage excessive use of water; and 5) provides a bar chart on billings to show customers their historic use.

Although water use is far from excessive in the City of Sumner, four goals are proposed which will assure that water is not wasted. To meet these goals the utility will: 1) provide customers with information on how to conserve water; 2) promote the use of low use fixtures and appliances; 3) provide customers information on proper use of water for irrigation and provide them rain gages to measure their irrigation usage; and 4) improve our inspection of illegal use of water by contractors and others.

CITY COUNCIL COMMITTEE RECOMMENDATION: "Do Pass" recommendation from the Public Works Committee, after consideration of public comment at Public Hearing. Reviewed by Council at study session.

STAFF RECOMMENDATION: Adopt Resolution No. 1232: Setting water use efficiency goals for reducing water consumption.

(BELOW TO BE COMPLETED BY CITY CLERKS OFFICE)

COUNCIL ACTION:

- ☐ APPROVED
- ☐ DENIED
- ☐ TABLED/DEFERRED/NO ACTION
- ☐ MOVED TO SECOND READING *(ordinances only)*

COUNCIL BILL #	08-01
1ST reading	
Enactment reading	01/07/08
ORDINANCE #	
RESOLUTION #	1232

We will set the standard of excellence for a progressive small city.

Appendix C

Excerpted Sections of the Washington Administrative Code & Published DOH Information Pertaining to Water Use Efficiency Plan Requirements

- Washington Administrative Code:
  - WAC 246-290-496
  - WAC 246-290-810
  - WAC 246-290-820
  - WAC 246-290-830
  - WAC 246-290-840
- Water Use Efficiency Guidebook, DOH 331-375, third edition, Revised January 2017 including Appendices B, H, I
- DOH pamphlet 331-402 Setting Goals to Use Water Efficiently, June 2008

WAC 246-290-810

Water use efficiency program.

(1) Water system plans and small water system management programs submitted for approval for the first year after the effective date of this rule, must describe the municipal water supplier's existing water use efficiency program. The municipal water supplier must continue existing levels of water use efficiency.

(2) Subsections (3) and (4) of this section apply to:

(a) Water system plans submitted to the department for approval under WAC **246-290-100** one year after the effective date of this rule.

(b) Small water system management programs developed and implemented or submitted to the department for approval one year after the effective date of this rule.

(3) Municipal water suppliers shall develop and implement a water use efficiency program which includes sufficient cost-effective water use efficiency measures to meet the water use efficiency goals developed under WAC **246-290-830**.

(4) Municipal water suppliers shall complete the following items in the water use efficiency program:

(a) Describe the current water use efficiency program;

(b) For systems serving one thousand or more total connections, estimate the amount of water saved through implementation of the water use efficiency program over the prior six or more years; the estimate may include the entire approval period of the most recent water system plan required under WAC **246-290-100**;

(c) Describe the chosen water use efficiency goals and document the goals were established in accordance with WAC **246-290-830**;

(d) Evaluate water use efficiency measures to determine if they are cost-effective as follows:

(i) Evaluate or implement, at a minimum, the number of water use efficiency measures specified in Table 13 based on the system's total number of connections.

(ii) Evaluate or implement water use efficiency measures from the following categories of measures if they are applicable: Indoor residential, outdoor, and industrial/commercial/institutional.

(iii) For systems serving less than one thousand total connections, describe the evaluation process used to select water use efficiency measures.

(iv) For systems serving one thousand or more total connections, include the following criteria when evaluating water use efficiency measures:

(A) Quantitatively evaluate water use efficiency measures to determine if they are cost-effective from the system's perspective including the marginal costs of producing water.

(B) Address whether the water use efficiency measures are cost-effective if the costs are shared with other entities.

(C) Quantitatively or qualitatively evaluate water use efficiency measures to determine if they are cost-effective from the societal perspective.

Table 13

Number of connections	Less than 500	500-999	1,000-2,499	2,500-9,999	10,000-49,999	50,000 or more
	1	4	5	6	9	12

Number of connections	Less than 500	500-999	1,000-2,499	2,500-9,999	10,000-49,999	50,000 or more
Water use efficiency measures						

(e) Describe all water use efficiency measures to be implemented over the next six or more years, including a schedule and a budget that demonstrates how the water use efficiency measures will be funded. Purveyors may submit a schedule and budget for the entire water system plan approval period, if the approval period is longer than six years;

(f) Describe how consumers will be educated on water use efficiency practices;

(g) Estimate projected water savings from selected water use efficiency measures;

(h) Describe how the water use efficiency program will be evaluated for effectiveness;

(i) Evaluate water distribution system leakage as follows:

(i) Include distribution system leakage annual totals in accordance with WAC **246-290-820** for each of the past six or more years. Purveyors shall submit distribution system leakage annual totals for the entire water system plan approval period if the approval period was longer than six years.

(ii) If necessary, include a copy of the water loss control action plan in accordance with WAC **246-290-820**(4).

(iii) If all or portions of transmission lines are excluded when determining distribution system leakage, estimate the amount of leakage from the excluded portion of the transmission mains and describe how it is maintained to minimize leakage.

[Statutory Authority: RCW **43.20.050** and **70.119A.080**. WSR 17-01-062, § 246-290-810, filed 12/14/16, effective 1/14/17. Statutory Authority: RCW **70.119A.180**. WSR 07-02-025B, § 246-290-810, filed 12/22/06, effective 1/22/07.]

WAC 246-290-820

Distribution system leakage standard.

(1) Municipal water suppliers shall determine distribution system leakage annually under subsection (2) of this section or an alternative methodology under subsection (3) of this section.

(a) Municipal water suppliers shall include (i), (ii), or (iii) of this subsection in water use efficiency performance reports developed under WAC **246-290-840** and water use efficiency programs developed under WAC **246-290-810**:

(i) Distribution system leakage totals calculated under subsection (2) of this section shall be recorded in annual percent and volume;

(ii) Distribution system leakage totals calculated under subsection (3) of this section shall include annual figures and the approved alternative methodology's numerical standard(s); and

(iii) For systems not fully metered, the status of meter installation and any actions taken to minimize leakage.

(b) Municipal water suppliers will be considered in compliance with this section if any of the following conditions are satisfied:

(i) Distribution system leakage calculated in accordance with subsection (2) of this section is ten percent or less for the last three-year average;

(ii) Distribution system leakage calculated under subsection (3) of this section meets the numerical standards for the approved alternative methodology for the last three-year average;

(iii) For systems serving less than five hundred total connections, distribution system leakage calculated in accordance with subsection (2) of this section is twenty percent or less for the last three-year average and the steps outlined in subsection (5) of this section are completed; or

(iv) A water loss control action plan has been developed and implemented under subsection (4) of this section and the system is meeting the implementation schedule.

(2) Calculate the percent of distribution system leakage annually using the following equation:

$$DSL = [(TP - AC)/(TP)] \times 100$$

Where:

DSL	=	Percent of Distribution System Leakage (%)
TP	=	Total Water Produced and Purchased
AC	=	Authorized Consumption

(a) Total water produced and purchased, and authorized consumption must be calculated using data from meters installed under WAC **246-290-496**. Elements of authorized consumption that cannot be metered, such as fire flow, must be estimated.

(b) All or portions of transmission lines may be excluded when determining distribution system leakage.

(c) Any water that cannot be accounted for shall be considered distribution system leakage.

(3) Municipal water suppliers may use an alternative methodology to calculate distribution system leakage if both (a) and (b) of this subsection are satisfied.

(a) The alternative methodology is contained in published standards or specifications of the department, Environmental Protection Agency, American Water Works Association, American Public Works Association, or American Society of Civil Engineers.

(b) The alternative methodology is approved for statewide use by the department, to provide a better evaluation of distribution system leakage than percent of total water produced and purchased, is appropriate for the system requesting to use it, and uses numerical standards so that compliance and action levels can be determined.

(4) If the average distribution system leakage for the last three years does not meet the standard calculated under subsection (1)(b)(i), (ii), or (iii) of this section, the municipal water supplier shall develop and implement a water loss control action plan. Municipal water suppliers shall submit the water loss control action plan to the department as part of a water use efficiency program under WAC **246-290-810** and upon request by the department. The control methods described in a water loss control action plan shall be commensurate with the level of leakage reported. The following items shall be included in the water loss control action plan:

(a) The control methods necessary to achieve compliance with the distribution system leakage standard;

(b) An implementation schedule;

(c) A budget that demonstrates how the control methods will be funded;

(d) Any technical or economic concerns which may affect the system's ability to implement a program or comply with the standard including past efforts and investments to minimize leakage;

(e) If the average distribution system leakage calculated under subsection (2) of this section is greater than ten and less than twenty percent of total water produced and purchased, the water loss control action plan must assess data accuracy and data collection;

(f) If the average distribution system leakage calculated under subsection (2) of this section is between twenty and twenty-nine percent of total water produced and purchased, the water loss control action plan must include elements listed under (e) of this subsection and implementation of field activities such as actively repairing leaks or maintaining meters within twelve months of determining standard exceedance;

(g) If the average distribution system leakage calculated under subsection (2) of this section is at thirty percent or above the total water produced and purchased, the water loss control action plan must include elements listed under (e) and (f) of this subsection and include implementation of additional control methods to reduce leakage within six months of determining standard exceedance; and

(h) If the average distribution system leakage calculated under subsection (3) of this section is over the approved alternative methodology's numerical standard, the department will take appropriate compliance actions and work collaboratively with the municipal water supplier to ensure the control methods and level of activity are commensurate with the level of leakage.

(5) Systems serving less than five hundred total connections may submit a request to the department for approval of an average distribution system leakage up to twenty percent. The following information must be submitted to the department with the request:

(a) Production volume;

(b) Distribution system leakage volume;

(c) Evidence documenting that:

(i) A leak detection survey using best available technologies has been completed on the system within the past six years for purveyors required to develop a small water system management program under WAC **246-290-105** or within the approval period of the most recent water system plan for purveyors required to submit a water system plan under WAC **246-290-100**;

(ii) All leaks found have been repaired;

(iii) The system is unable to locate additional leaks; and

(iv) Ongoing efforts to minimize leakage are included as part of the system's water use efficiency program; and

(d) Any technical concerns or economic concerns, or other system characteristics justifying the higher distribution system leakage.

[Statutory Authority: RCW **43.20.050** and **70.119A.080**. WSR 17-01-062, § 246-290-820, filed 12/14/16, effective 1/14/17. Statutory Authority: RCW **70.119A.180** and **43.20.050**. WSR 08-03-061, § 246-290-820, filed 1/14/08, effective 2/14/08. Statutory Authority: RCW **70.119A.180**. WSR 07-02-025B, § 246-290-820, filed 12/22/06, effective 1/22/07.]

Reviser's note: The brackets and enclosed material in the text of the above section occurred in the copy filed by the agency.

WAC 246-290-830

Water use efficiency goal setting.

(1) The elected governing board or governing body of the public water system shall establish water use efficiency goals within one year of the effective date of this rule for systems serving one thousand or more total connections, and within two years of the effective date of this rule for systems serving less than one thousand total connections.

(2) Water use efficiency goals must be designed to enhance the efficient use of water by the water system's consumers.

(3) If a municipal water supplier determines that further reductions over current consumption levels are not reasonably achievable, the municipal water supplier shall provide justification that considers historic water use efficiency performance and investment and any other factors that support that determination. Justification must be provided in water use efficiency programs developed under WAC **246-290-810** and in water use efficiency performance reports developed under WAC **246-290-840**.

(4) Municipal water suppliers must provide documentation when requested by the department and in water use efficiency programs developed under WAC **246-290-810** that demonstrates the following goal setting requirements have been met:

(a) Goals shall be set in a public forum that provides opportunity for consumers and the public to participate and comment on the water use efficiency goals;

(b) Public notice must occur at least two weeks prior to the public forum. Public notice must include the purpose, date, time, and place of the forum, and where materials supporting the rationale for the proposed goals can be reviewed;

(c) The elected governing board or governing body of the public water system shall review and consider all comments received;

(d) The following must be made available to the public for the purpose of fully documenting the basis for each goal:

(i) The information listed under WAC **246-290-810**(4);

(ii) Annual water use efficiency performance reports prepared under WAC **246-290-840**;

(iii) Water supply characteristics description in accordance with WAC **246-290-100** (4)(f)(iii)(B) or source description in accordance with WAC **246-290-105** (4)(f); and

(iv) A summary of the comments received and how they were considered.

(5) Existing public processes may be used if all requirements listed under subsection (4) of this section are met.

(6) Water use efficiency goals must include:

(a) Consideration of the system's forecasted demand and water supply characteristics;

(b) Measurable outcomes in terms of reduced or maintained water production or usage. Outcomes may be expressed on a per capita, per connection, total system, or other basis as deemed appropriate by the municipal water supplier;

(c) A schedule for achieving the water use efficiency goals; and

(d) Implementation schedule for each water use efficiency measure selected under WAC **246-290-810**(4).

(7) The elected governing board or governing body of the public water system shall evaluate and reestablish water use efficiency goals following the process identified in subsection (4) of this section at least every six years for purveyors required to develop a small water system management program under WAC **246-290-105** or as part of developing or

updating a water system plan for purveyors required to submit a water system plan under WAC **246-290-100**.

(8) Water use efficiency goals may be changed at any time in accordance with subsection (4) of this section. Changes to goals must be identified in the next performance report.

(9) Water use efficiency programs must be modified if any water use efficiency goal is not met. Program modifications must be designed to achieve the system's water use efficiency goals.

[Statutory Authority: RCW **43.20.050** and **70.119A.080**. WSR 17-01-062, § 246-290-830, filed 12/14/16, effective 1/14/17. Statutory Authority: RCW **70.119A.180**. WSR 08-12-019, § 246-290-830, filed 5/28/08, effective 7/1/08; WSR 07-02-025B, § 246-290-830, filed 12/22/06, effective 1/22/07.]

WAC 246-290-840

Water use efficiency performance reports.

(1) Municipal water suppliers shall develop an annual water use efficiency performance report and must:

(a) Send the water use efficiency performance reports to the department and the consumers by July 1st of each year for the previous year and make them available to the public;

(b) For systems serving one thousand or more total connections, develop the first water use efficiency performance report by July 1, 2008;

(c) For systems serving less than one thousand total connections, develop the first water use efficiency performance report by July 1, 2009; and

(d) Municipal water suppliers shall submit performance reports in a manner specified by the department.

(2) Water use efficiency performance reports shall include:

(a) Total annual production. Systems with multiple sources may provide aggregate data;

(b) Annual water distribution system leakage totals in accordance with WAC **246-290-820**;

(c) A description of the system's water use efficiency goals set in accordance with WAC **246-290-830**;

(d) A schedule for achieving the goals;

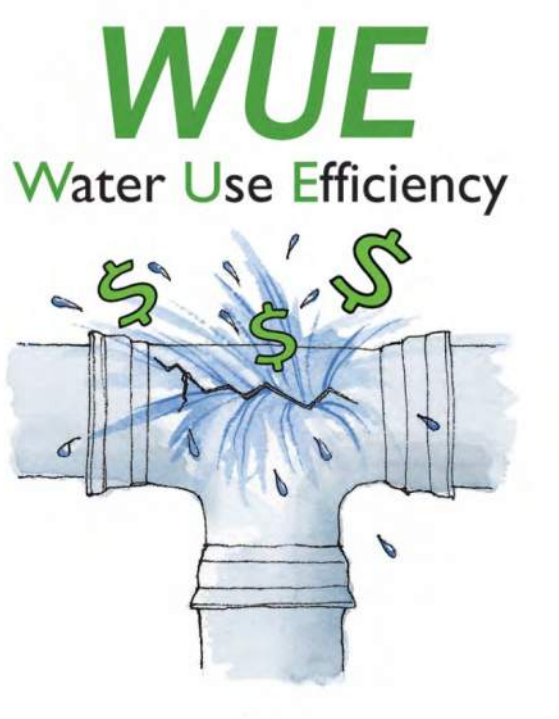
(e) A narrative description of progress toward achieving the goals; and

(f) Report the status of meter installation and all actions taken to minimize leakage.

[Statutory Authority: RCW **70.119A.180**. WSR 07-02-025B, § 246-290-840, filed 12/22/06, effective 1/22/07.]

Water Use Efficiency Guidebook

Third Edition
Revised January 2017



Washington State Department of Health
Division of Environmental Health
Office of Drinking Water

DOH 331-375

If you need this publication in alternate format, call (800) 525-0127. For TTY/TDD, call (800) 833-6388.

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Chapter 6: Distribution System Leakage

Chapter 7: Goal Setting and the Public Forum

Chapter 8: Annual WUE Report

Acronyms and Abbreviations

AC	Authorized consumption
DOH / department	Department of Health
DSL	Distribution system leakage
Ecology	Department of Ecology
EPA	U.S. Environmental Protection Agency
ERU	Equivalent residential unit
gpm	Gallons per minute
MWS	Municipal water supplier
ODW	Office of Drinking Water
Planning documents	Water system plan or small water system management program
SWSMP	Small water system management program
TP	Total produced and purchased
WAC	Washington Administrative Code
WLCAP	Water Loss Control Action Plan
"We" or "Us"	Department of Health, Office of Drinking Water
WSP	Water system plan
WUE	Water use efficiency
"You" or "Your"	Your water system

Chapter 1: Introduction to Water Use Efficiency Requirements

1.1 Intent of This Guidebook

Developing an effective water use efficiency (WUE) program can take a lot of time and effort. The intent of this guidebook is to provide basic information for any water system developing a WUE program. Based on water system size and complexity, some water systems may find parts of this guidebook more useful than others may.

The main purpose of the guidebook is to help you understand the state WUE requirements (chapter 246-290 Washington Administrative Code (WAC)), however, it does not cover all of them. Each chapter summarizes how to implement the WUE rule by providing guidance and examples. Our goal is to clarify how to meet the Department of Health's expectations for complying with the WUE rule.

This guidebook will help you:

- Create a WUE program that works for your water system.
- Understand the fundamental WUE requirements:
    1. Planning.
    2. Distribution system leakage standard.
    3. Customer goal setting.
    4. Annual WUE reporting.

Using Water Efficiently: What is a WUE Program?

Using water efficiently can help you meet future needs, operate successfully within financial, managerial, and technical constraints, and continue to deliver safe and reliable drinking water. We encourage and appreciate all efforts you are taking to conserve water and use it efficiently.

A WUE program is a plan your water system follows to increase water supply and water demand efficiency. The intent is to minimize water withdrawals and water use by implementing water saving activities and adopting policies, resolutions, ordinances, or bylaws.

See Appendices R and S for real examples of WUE programs for both a large and a small water system here in Washington.

We want to keep you informed of any new guidance that may assist you in developing your WUE program. If you have any questions, please visit our WUE website at www.doh.wa.gov/ehp/dw/programs/wue.htm or contact:

- Your regional office planner (see Appendix A for contact information).
- Mike Dexel, WUE Program Lead, (360) 236-3154 or michael.dexel@doh.wa.gov

1.2 Protecting Our Water Resources

In 2003, the Washington State Legislature passed Engrossed Second Substitute House Bill 1338, better known as the Municipal Water Law, to address the increasing demand on our state's water resources. The law established that all municipal water suppliers must use water more efficiently in exchange for water right certainty and flexibility to help them meet future demand. The Legislature directed the Department of Health to adopt an enforceable WUE program, which became effective on January 22, 2007. Creating a regulatory WUE program is intended to achieve a consistently high level of stewardship among all municipal water suppliers (MWS).

Pressure on our state's water resources comes from many sources, including population growth, instream flows, and business needs. As the potential for developing new sources of water within the state diminishes, the efficient use of water is necessary to meet future demand.

Water efficiency is a "proactive approach" to protecting public health.
The Office of Drinking Water's mission focuses on public health. The WUE program draws the connection between water resources and safe and reliable drinking water by expanding our perspective to include water efficiency. Our WUE program will increase awareness about how the efficient use of water strengthens the relationship between the reliability and safety of our water supplies. This connection also enhances our ability to accomplish our mission.

The WUE program is a priority for the Office of Drinking Water. Droughts, climate change, growth demands, and fewer granted water rights all signal the possibility of future long-term water disruptions and temporary interruptions during peak demand due to declining water supplies. The WUE program requires water systems to pay attention to their usage patterns by reporting annually and managing water loss. Water systems can proactively prevent potential health risks to their customers by effectively planning and implementing WUE measures that can result in fewer emergencies.

The WUE requirements support our common goal of ensuring safe and reliable drinking water in the following ways:

Contribute to long-term water supply reliability and public health protection.
Water systems must have a reliable supply of water to meet current and future needs. WUE requirements help MWS operate efficiently to protect against:

- Temporary water service interruptions during peak usage.
- Long-term or repeated water disruptions due to limited water supply.
- Contamination of the water supply due to leaky pipes.

Public health is always at risk during these events. Water systems position themselves to provide a reliable drinking water supply for their customers by implementing an effective WUE program.

Promote good stewardship of the state's water resources.
Pressure on the state's limited water supplies is steadily increasing. Water systems using their water efficiently allow growth in their communities and water for other environmental uses. The efficient use of water helps ensure reliable water supplies are available for your customers.

Ensure efficient operation and management of water systems.
For most water systems, conserved water can be the least costly source for new supply. Water system managers have to balance operation and growth costs with customer revenue when making decisions on the future of their water system. The WUE requirements involve the customers and the public in the decision-making process through the goal setting public forum. This input helps water system owners and managers make smart choices about how to use water efficiently.

1.3 Using Water Efficiently

The Office of Drinking Water considers using water efficiently an important part of the planning program. Since 1994, we have used the publication Conservation Planning Requirements to describe how water systems should incorporate water use efficiency into their planning process. Many water systems have based their successful conservation programs on the 1994 document. This guidebook replaces that document.

The WUE requirements emphasize the importance of measuring water use and evaluating the effectiveness of your WUE program. There are three fundamental elements:

Planning Requirements—As part of a water system plan or a small water system management program, MWS are required to:

- Collect data.
- Forecast demand.
- Evaluate WUE measures.
- Calculate distribution system leakage.
- Implement a WUE program to meet their goals.

Distribution Leakage Standard—MWS are required to meet a distribution system leakage standard to minimize water loss from their distribution system. In order to calculate leakage, production (source) and consumption (service) meters are required.

Goal Setting and WUE Reporting—MWS are required to set WUE goals through a public process and report annually on their performance to their customers and the Department of Health. They also must make the information available to the public.

1.4 Who is Affected by Water Use Efficiency Requirements

The Municipal Water Law (RCW 90.03.015(3)) says that WUE requirements apply to all water systems defined as municipal water suppliers (MWS). A MWS is "an entity that supplies water for municipal water supply purposes."

Your water system is most likely a MWS if you can answer "yes" to any of the following:

- My system has 15 or more residential service connections.
- My system provides water to a city, town, public utility district, sewer district, or water district.
- My system provides water in a residential manner to a non-residential population that averages at least 25 people for at least 60 days a year.
- My system provides water indirectly for purposes listed in 1 or 2, through the delivery of water to another water system.

If you answered "no" to all of these questions, you most likely don't meet the definition of a MWS and don't have to meet the WUE requirements.

Most Group A Community Water Systems are Considered MWS

The definition of a MWS includes water systems that serve 15 or more residential connections, which includes most Group A community water systems. However, not all Group A water systems are municipal water suppliers.

Our regulations consider both residential and non-residential connections when defining a Group A water system. A water system using a water right to serve 15 homes would be a MWS. A water system serving 14 homes and a business would not be a MWS because a business is a non-residential connection. Both systems, however, are Group A community water systems.

In general, the following Group A water systems are **examples of municipal water suppliers**:

- City
- Water district
- Mobile home park
- Water association

Some Noncommunity Water Systems May Be Considered MWS

If your water system is a noncommunity water system that provides water that is used in a residential manner (such as drinking, cooking, cleaning, and sanitation), you may be considered a MWS if you provide water to a non-residential population for an average of at least 25 people for at least 60 days a year.

Some noncommunity water systems may be MWS, however this is determined on a case-by-case basis. We coordinate with the Department of Ecology on making these determinations. If you have a noncommunity water system and are not sure whether you qualify as a MWS, you may need to contact the Department of Ecology at the numbers listed below.

Department of Ecology's Regional Offices:

Central Regional Office (Yakima):	(509) 575-2490
Eastern Regional Office (Spokane):	(509) 329-3400
Northwest Regional Office (Bellevue):	(425) 649-7000
Southwest Regional Office (Lacey):	(360) 407-6300

1.5 Complying with the Water Use Efficiency Requirements

Litigation over the constitutionality of the MWL created some uncertainty for privately owned water systems. On June 11, 2008, King County Superior Court Judge Jim Rogers struck parts of the MWL. The ruling invalidated definitions of "municipal water supplier" and "municipal supply purposes", which temporarily removed privately owned water systems from the municipal water supplier definition. However, on October 28, 2010, the Washington State Supreme Court affirmed the constitutionality of the MWL. The Supreme Court upheld the sections of the law that were invalidated by the King County Superior Court.

These sections were the definitions of municipal water supplier and municipal water supply purposes, and the "in good standing" status of water rights based on system capacity rather than water use. The Supreme Court found that these sections do not violate separation of powers or facially violate the right to due process. Privately owned water systems are once again defined as municipal water suppliers, and they must comply with the WUE regulations.

Many privately owned water systems delayed implementing the WUE requirements until the Supreme Court issued an official decision. The majority of the WUE requirements and deadlines have passed for privately owned water systems (except for the service meter installation deadline). Since those deadlines have passed, we recommend that all privately owned systems comply with the WUE requirements listed in the third column of Table 1-1.

Most notably, privately owned water systems must submit the first annual WUE report by July 1, 2011, even if they haven't fulfilled all of the WUE requirements. This report must include the following information:

- Service meter installation schedule.
- Identify the established WUE customer goal.
- Total production—the annual total amount of water pumped from all source meter(s).
- Authorized consumption—the annual total amount of water consumed from customer meter records plus any other authorized unmetered uses (see Chapter 6).
- Information regarding progress of fulfilling any of the other WUE requirements, such as reducing water loss.

The requirements and compliance deadlines are listed in order by due date in Table 1-1.

Table 1-1: Summary of Water Use Efficiency Requirements

Requirements	Deadlines for MWS under 1,000 connections	Deadlines for MWS with 1,000 or more connections	Deadlines for privately owned water systems
Include WUE program in planning documents	January 22, 2008	January 22, 2008	December 31, 2011
Submit first annual WUE report	July 1, 2009	July 1, 2008	**July 1, 2011**
Submit service meter installation schedule	July 1, 2009	July 1, 2008	**July 1, 2011**
Set your own WUE goals	**July 1, 2010**	**July 1, 2009**	**July 1, 2011**
Meet distribution leakage standard (based on 3-year rolling average)	**July 1, 2011, or 3 years after installing all service meters**	**July 1, 2010, or 3 years after installing all service meters**	**July 1, 2013, or 3 years after installing all service meters**
Complete installation of all service meters	**January 22, 2017**	**January 22, 2017**	**January 22, 2017**

Enforcing the WUE Requirements

We will enforce the WUE requirements consistent with our compliance strategy. Initially, we will focus our compliance efforts on technical assistance and guidance to help you develop an effective WUE program that meets the intent of the WUE rule. Egregious violators may be targeted for more formal enforcement if your water system fails to demonstrate that you have met the WUE requirements. This may affect the status of your operating permit.

Show us that you have achieved WUE compliance by summarizing your efforts in the annual WUE report. The annual WUE report is important. It tells us that you have made progress in achieving water efficiency within your water system by explaining how you have performed from year-to-year in the following categories:

- Reducing leaks.
- Installing or replacing meters.
- Implementing measures to help your customers use less water.

Once you submit your report, we will ensure that a customer goal has been established for your water system and determine whether you are in compliance with the distribution leakage standard (see Chapter 6). We will keep a record of all annual WUE report submittals, and notify you if you fail to report.

Your WUE program will be reviewed for approval by our regional planners when you submit your small water system management program or water system plan to us for approval. Planners may withhold approval until you have demonstrated compliance with the WUE regulations.

You don't need to send your WUE program to us, unless we request it. In many cases, the WUE program will be kept for your own records as part of your planning document.

Chapter 2: Water Meters

2.1 Overview of the Metering Requirement

Measuring your water use with production and consumption meters is fundamental to helping you develop a successful water use efficiency (WUE) program. Installing meters is one of the most significant WUE requirements. Meters provide the information necessary to calculate accurate distribution system leakage. They also provide useful information to evaluate the effectiveness of your WUE program. Metering deadlines are listed in Table 2-1.

Table 2-1: Summary of Water Use Efficiency Requirements for Meters

Requirements	Deadline
Install production meters	January 22, 2007
Submit service meter installation schedule	With your first annual WUE report
Complete installation of all service meters	January 22, 2017

2.2 Why Meters Are Important

Installing meters is the most important step you can take to establish an effective WUE program. Meters provide the information you need to evaluate water use and leakage, and they help you prioritize your WUE efforts. Installing service meters and billing your customers based on the amount of water they use is the most effective water efficiency measure you can implement. Once customers realize how much water they are using, water demand tends to decrease.

If you are not required to install consumption meters (see Section 2.7), you can install zone meters to isolate sections of the distribution system. Zone meters will help you identify and prioritize areas with the most leaks and evaluate how to proceed with a water loss control action plan.

If you plan on installing meters in the future, you can get a head start by installing meter boxes at each customer connection when street or sidewalk repairs, landscaping projects, or other excavation/utility projects occur in your community.

Installing Meters Makes Economical Sense
Meters accurately identify water loss within the distribution system. Lost water has a value. Consider the cost to pump, treat, store, and distribute the water. Add up these factors and you'll find that fixing leaks makes economical sense. The best way to accurately determine water loss is to install consumption meters.

How Much Will the Customer Meter Cost?
We estimate the per-connection cost for installing a meter is $5.30 to $7.35 per month. This includes the cost of the meter, installation, and meter reading with financing through a 15-year loan at 6 percent interest. Over time, today's investment in service meters and repairing leaks will pay for itself.

2.3 Production Meters

Production meters, also referred to as source meters, are required on all existing and new water sources. Measuring the water produced from your source and purchased from other water systems is the first step in managing water efficiently. This information assists you in tracking water production, understanding seasonal variations, and accounting for overall use of the resource.

You are required to measure the volume of water produced or purchased upstream of the distribution system with a production meter (WAC 246-290-496(1)(a)). Most water systems will use their source meter to provide this information. If your water system has extensive transmission mains, you may install a production meter at the beginning of the distribution system to calculate distribution system leakage. Installing a meter at the beginning of the distribution system does not alter the source metering requirements adopted by the Department of Ecology, which may have different installation and reporting requirements.

Source meters must be able to measure the volume of water (WAC 246-290-496(1)(a)). Hour meters, dedicated power consumption meters, and other non-volume meters don't provide the type of production data necessary to successfully calculate distribution system leakage.

Source meters are required as of January 22, 2007.

We expect that you are recording monthly production data. If you don't have a meter on all of your sources, you should install one immediately. Source meters are not under the same 10-year installation schedule as service and intertie[1] meters.

[1] An intertie means an interconnection between public water systems, allowing the exchange or delivery of water between those systems.

2.4 Consumption Meters

Consumption meters, also referred to as service or customer meters, provide information to you and your customers regarding their water usage. Service meter data also provides the most accurate assessment of distribution system leakage.

Service meters are required on all existing and new direct service connections[2] and clustered entities (WAC 246-290-496(2)(c) and (2)(d)). The requirements allow clustering of certain customers using a single meter (see Section 2.7).

New connections must be metered at the time water is provided to the customer (WAC 246-290-496(2)(d)). Service meters don't need to be installed until a customer requests water from the distribution system (for example, when a service connection is activated).

2.5 Intertie Meters

Permanent and Seasonal Interties

Meters must be installed on all interties used as permanent or seasonal sources (WAC 246-290-496(2)(e)). You may need to install intertie meters at an earlier date in order to calculate accurate distribution system leakage.

Emergency Interties

Emergency interties, described in WAC 246-290-132(4), are exempt from the metering requirement.

2.6 Meter Installation Schedule

Meter installation schedule requirements only apply if you don't already have service or intertie meters installed. If you don't have service meters installed on all existing direct service connections and intertie connections, you must meet the following three requirements until your water system is fully metered (WAC 246-290-496(2)(f)):

[2] A direct service connection is a service hookup to a property that connects to a distribution main and where additional distribution mains are not needed to provide service.

1. Submit a meter installation schedule with your first WUE report.
2. Implement activities to minimize leakage.
3. Report status of installing meters and minimizing leakage in your annual WUE report, and in any planning document you submit for approval.

Submit a Meter Installation Schedule

You must submit a meter installation schedule to the Department of Health if you aren't fully metered. **Use your first WUE report to document when and how you plan to install meters.**

Your meter installation schedule must include:

- A schedule for completing installation on all existing connections and interties by January 22, 2017 (WAC 246-290-496(2)(c) and 246-290-496(2)(f)).
- Documentation showing steady and continuous progress toward complying with the service and intertie meter requirements (WAC 246-290-496(2)(f)(i)(C)). This may include:
    - Percentage of meters that will be installed each year.
    - Funding strategy to cover the metering expenses.

Implement and Report Activities to Minimize Leakage

If you aren't fully metered, there are actions you must take to minimize leakage (WAC 246-290-496(2)(f)(ii)). These activities may include:

- Leak detection survey.
- Leak repair.
- Night usage survey.
- Planned replacement of leaking mains.
- Improved data collection.

Report Status of Installing Meters

You must report your progress on installing meters in your annual WUE report and WUE program (WAC 246-290-496(2)(f)(iii)). Meter installation progress should be consistent with the meter installation schedule provided to us.

2.7 Exceptions to the Service Meter Requirement

The following clustered entities can measure the volume of water through a single meter:

- Campgrounds.
- Recreational vehicle parks.
- Property designated as a mobile home park.
- A building with multiple units (for example, an apartment building).
- Complexes with multiple buildings served as a single connection (for example, a business park).

Am I a Designated Mobile Home Park?

To determine if your property is considered a designated mobile home park, please contact your local planning authority (usually the county assessor). If the local authority has a zoning designation, use code, property class, or similar term used to describe the property as a "mobile home park" for the entire tax parcel or property legal description, then it is what we would consider a "designated mobile home park" as written in WAC 246-290-496(2)(g)(iii). Designated mobile home parks don't need to install service meters.

State law (RCW 59.20.030(6)) defines a mobile home park as:

> "Mobile home park" or "manufactured housing community" means any real property which is rented or held out for rent to others for the placement of two or more mobile homes, manufactured homes, or park models for the primary purpose of production of income, except where such real property is rented or held out for rent for seasonal recreational purpose only and is not intended for year-round occupancy.

Metering Requirements for Municipal Water Suppliers That Serve Clustered Entities

If your water system serves a clustered entity, only one meter is required to measure consumption. For example, if you provide water to an industrial park with six buildings, only one meter is required to measure the consumption for the entire park. You would consider the industrial park as one single connection since you have no authority over the distribution system within the park. Consider the water used by the industrial park as an authorized consumption when calculating leakage.

Metering Requirements for Clustered Entities That Are Municipal Water Suppliers

If you are a campground, recreational vehicle park, or if your property is designated as a mobile home park, **and** considered a municipal water supplier, you don't have to install meters on all of your direct service connections. You may use a single meter (for example, source meter) or multiple meters to measure consumption in your distribution system. However, you are required to meet all other WUE requirements, including the distribution system leakage standard.

A good way to determine leakage in the absence of service meters is by conducting night flow testing. Measuring the amount of water used from your source meter or how much your reservoir has emptied between the hours of 2:00 and 4:00 a.m. is a good indicator of your water loss.

If your water system provides service to a complex with multiple buildings (such as public college) and is a municipal water supplier, you must install service meters on all direct service connections and must meet all other WUE requirements, including the distribution system leakage standard.

Here's an Idea

Consider installing the latest meter technology to track water use and leaks within your customers' homes.

The new automatic meter reading (AMR) and automatic meter infrastructure (AMI) meters are worth the investment. They automatically collect information from your meters and some have the ability to detect low flows (such as leaking faucets and toilets) and bill for that usage. Perhaps, most importantly, these meters:

- Increase your revenue, without increasing rates.
- Reduce apparent losses (which reduces annual leakage percentage)
- Save water.
- With AMI, systems can see hourly reading for all connections.
- With high-resolution registers, you will be able to identify who your largest users are and more importantly when they are using the water.
- You will be able to identify which customer has a leak and how large it is.
- You will be able to provide usage information to your customer's fingertips.
- You will have access to the data that will help you predict future demands.

2.8 Selection, Installation, Maintenance, and Operation of Meters

You must select, install, operate, and maintain your meters using accepted industry standards, and as required by the manufacturer (WAC 246-290-496(3)).

We recommend that a qualified professional install your service meters in accordance with the manufacturer's instructions. If you install your water system's service meters, take extra care not to disturb the distribution system. Contamination to the distribution system can occur when the water lines are disrupted, compromising your ability to provide safe and reliable water.

Meters must be installed and calibrated correctly to be accurate. The accuracy of your meters diminishes over time, and older meters may require calibration or replacement. Inaccurate meters results in lost revenue. Even a few percentage points of inaccurate measurement on a larger meter can cost you hundreds or thousands of dollars every month. Develop a process and timeline for inspecting, testing, calibrating, and replacing meters as recommended by the manufacturer. How often you do this depends on the size of the meter, water quality, and other factors.

On a Budget?
Save Money with Good Quality Used Meters

Many large water utilities are replacing their older meters with new automatic meter reading (AMR) and automatic meter infrastructure (AMI) technology. The older (used) meters may still be in good working condition. If you are a private water system looking for an inexpensive option to install meters for the first time, or replace very old inaccurate meters, consider contacting your local utility to see what they are doing with their old meters. Your regional office planner or engineer may also know which systems are replacing their meters. See Appendix A for regional office contact information.

Before purchasing used meters, verify that the utility has tested a representative sample for accuracy. It's a good idea to look for meters that are above 95 percent accurate before you purchase them.

2.9 Funding Options for Installing Meters and General WUE Efforts

Generally, funding for meters is only available when meter installation is part of a larger capital improvement project. A few state and federal loan or grant programs may provide funding for meters, including:

- Drinking Water State Revolving Fund (loan).
- Public Works Trust Fund (loan).
- Community Development Block Grant (grant with a match requirement).
- U.S. Department of Agriculture Rural Development (loan, may include partial grant).

New Resource Available

In response to the American Recovery and Reinvestment Act, www.grants.gov was established to improve government services to the public. This website is a central storehouse for information on over 1,000 grant programs and provides access to approximately $500 billion in annual awards. For more information visit www.grants.gov

Chapter 3: Data Collection

3.1 Overview of the Data Collection Requirement

Understanding your impact on the water supply is important for making informed water resource decisions. The water use efficiency (WUE) requirements include collecting data and describing water source and supply characteristics (such as instream flow restrictions, salt-water intrusion, and aquifer depletion).

Good information is needed to develop a successful WUE program. By understanding how much water is used by you and your customers, you can make educated choices about how best to conserve water.

Under the requirements, you need to collect production and consumption data on a regular basis and report that information in your planning document and annual WUE report. Water production and consumption data are critical for calculating distribution system leakage.

Water use data is needed for the following:

- Calculating leakage.
- Forecasting demand for future water needs.
- Identifying areas for more efficient use of water.
- Evaluating the success of your WUE program.
- Describing your water supply characteristics.
- Aiding in decision-making about water management.

3.2 Collecting Source Meter Data

Source meters are required on all existing and new water sources (WAC 246-290-496(1)). Within a water system plan (WAC 246-290-100(4)(b)(ii)) or small water system management program (WAC 246-290-105(4)(h)), you must include the following:

- Monthly and annual totals of water produced.
- Monthly and annual totals of water purchased from another water system.
- Annual totals of water supplied to other water systems through interties.

Water Produced

Water produced is the amount of water you use from your source. You must collect this data monthly and calculate annual totals from each source (WAC 246-290-100 (4)(b)(ii)(A)). **When submitting your annual WUE report each year, you will need this information.**

Source meters should be installed as soon as possible. You won't be able to comply with the WUE rule without this basic information. If you don't have a meter on all of your sources, develop a plan and budget to get one installed now.

3.3 Collecting Intertie Data

Interties provide consumption and production data. If you supply water through an intertie, consider it authorized consumption (AC). If you receive water through an intertie, consider it total produced and purchased (TP).

Water Supplied

Water supplied is the amount of water you provide to another water system through an intertie. Include this information in your AC data when calculating leakage (see Chapter 7). You must collect this data annually from each intertie (WAC 246-290-100(4)(b)(ii)(C)).

Water Received

Water received, often purchased water, is the amount of water you get from another water system through an intertie. Include this information in your TP data when calculating leakage (see Chapter 7). You must collect this data monthly from each intertie and calculate annual totals (WAC 246-290-100(4)(b)(ii)(A)).

Wheeled Water

Wheeled water is a term that identifies an originating water supplier that uses another water supplier's pipes (wheeling water system) to supply water to a receiving water system (end user). This water is not directly used by the wheeling water system or its customers. Leakage must be tracked for each water system (originator, wheeling water system, and end user).

3.4 Collecting Service Meter Data

Service meters are required on all direct service connections. For water system plan (WAC 246-290-100(4)(b)(ii)) or small water system management program (WAC 246-290-105(4)(h)), you must report the following:

- Water consumed.
- Annual totals for each customer class (such as single-family residence or commercial use).
- Customer class seasonal variations (1,000 or more connections only).

Water Consumed

Obtaining consumption data from service meters is the most accurate method to know how much water is used and determine leakage within your water system. You must collect annual consumption data on how much water is being used by your customers (WAC 246-290-496(2), 246-290-100(4)(b)(ii), and 246-290-105(4)(h)(ii)). This data is useful in forecasting demand and determining leakage. To help determine leakage, you should estimate and record any authorized uses such as water system flushing, street washing, and firefighting.

Collecting regular consumption data will help you understand how water is being used, allow for evaluating rate structures, recognize water-saving opportunities, and evaluate progress on meeting goals. We recommend reading your service meters every month to obtain meaningful data for decision-making.

Customer Class

Include your annual water consumption data in your planning document for each customer class. Examples of class types are residential, non-residential, commercial, industrial, single family and multifamily.

Small water system management programs: You must include the annual amount of water consumed by your residential and non-residential customers (WAC 246-290-105(4)(h)(ii)).

Water system plans: You must include the annual amount of water used in each customer class (WAC 246-290-100(4)(b)(ii)(B)). You have the flexibility to define your own customer classes based on the types of customers in your water system.

Seasonal Variations in Customer Class for Water Systems With 1,000 or More Connections

Consumption data for customer classes may vary from season to season, particularly in the summer when water uses increase. For water systems with 1,000 or more connections, you must collect seasonal data to describe the variations in water consumption trends (WAC 246-290-100(4)(b)(ii)(D)). This data may be collected monthly, every other month, quarterly, or seasonally.

3.5 How to Collect Data

We suggest reading all meters (source, intertie, and service) every month. This will help you detect significant changes in water usage and manage any potential major problems or leaks.

It is important to collect data from source and service meters at the same time, otherwise you will get inaccurate water loss results for the year. Adjustments may be necessary when collecting data to reflect a 12-month period. Evaluate your billing cycles, billing software and data collection methods to ensure total production and authorized consumption annual values are accurate.

You have the flexibility to collect annual data on a schedule that meets your needs. For instance, you might choose a "data collection year" beginning on May 1 and ending on April 30 the following year. However, when you submit your annual WUE report, you will be asked to identify a "reporting year" (such as 2010) that verifies you have met the annual WUE reporting requirement.

The reporting year is similar to a tax year. For example, when you submit your report in 2011, you are reporting data from the previous year, and the reporting year in this example is 2010.

When you submit your annual report each year, you will be asked to identify your total water produced and authorized consumption for the previous year. Make sure you have collected this information. The online reporting system will automatically calculate annual DSL percentage, annual volume and DSL average percentage for the last 3 years.

3.6 Water Supply Characteristics

You will need to be aware of the factors that influence your ability to access your water supply. In order to gain better information about the long-term reliability of your sources, take the time to understand your water supply characteristics and consider them when making management decisions (see Appendix C for more information).

There are two fundamental WUE requirements regarding water supply characteristics:

- You must describe water supply characteristics or provide a source description to customers, the public, and Department of Health (WAC 246-290-105(4)(f), 246-290-100(4)(f)(ii)(B)).
- You will also need to consider the water supply characteristics when establishing a quantifiable water savings goal for your customers (WAC 246-290-830(6)(a)).

Connect Your WUE Program to Your Water Supply Characteristics

In order to provide context for customers and the public about your WUE program you must describe your water supply characteristics or a source description when:

- Setting your goals (WAC 246-290-830(6)(a)).
- Developing your planning document (WAC 246-290-105(4)(f) and 246-290-100(4)(f)(ii)(B)).

Small Water System Management Programs—Source Description

You must describe your sources of water (WAC 246-290-105(4)(f)). This description is similar to the information required in a wellhead protection plan. Your water supply characteristics must include:

- Sources description.
- Name and location of the source from which water is used.

Water System Plans—Water Supply Characteristics

You must provide a narrative describing your sources and any foreseeable impact (such as drought) to the resource (WAC 246-290-100(4)(f)(ii)(B)). Base your narrative on existing information, no additional studies are required. Using existing data and studies, describe how using water from your source—now and in the future—will affect the quantity and quality of that water. Your water supply characteristics must include:

- Sources description.
- Name and location of the sources.
- Production capacity.
- Seasonal variability.
- Water rights.
- Legal constraints.

Here's an Idea

When you submit your annual WUE report to customers, provide some background on the water supply characteristics or watershed in which you live. This example comes from the City of Seattle's Saving Water Partnership.

Watersheds:
The Source of Our Water

The region's fresh supply water comes primarily from two sources: the Cedar River Watershed and the Tolt River Watershed, both located in eastern King County. The watersheds are large, uninhabited areas of land that gather and store rain and snowmelt.

Year-round, 26 cities and water districts rely on a limited supply of stored water from these two sources to meet most of the daily needs of business, government, institutions, and 1.3 million people in our region. In addition to providing clean, clear, reliable drinking water, the watersheds also provide habitat for fish and wildlife.

You should try to find and report as much information as possible. This will be valuable documentation when planning for the future of your water system.

Your water supply characteristics or source description should be written in easy-to-understand language. You want your customers to understand water supply availability, its value to them and the environment, and the need to meet short- and long-term goals.

Appendix C has a list of questions to ask yourself when describing your water supply characteristics. It also includes examples of what a source description or water supply characteristics would look like within your planning document.

Where to Find Existing Water Supply Characteristics Information

Information from the Department of Health

- Your planning document, sanitary survey report, source metering records, water depth records, or historical information prepared by your city or county.
- Planning documents submitted by other water systems in the area that have completed a water supply characteristics narrative.
- Coordinated water system plans, if one covers your service area.

Information from the Department of Ecology

- Ecology has completed groundwater studies in some parts of Washington State. See the following link for information: www.ecy.wa.gov/programs/eap/groundwater/completedstudies.htm
- Water system plan reviewers in Ecology's Water Resources Program.
- Well logs. These are available online at http://apps.ecy.wa.gov/welllog/ You need to know the original owner of the well, street address, or legal location of the well (township, range, and section). Look at the well log for pump test information and water depth measurements made by the driller. Also, note the date the well was drilled and the depth.
- Check the Report of Examination for the water right permits. You can find this information by contacting your local Ecology Regional Office or the following link: www.ecy.wa.gov/org.html
- Watershed plans. Ecology's Watershed Planning Unit staff may know of watershed plans or existing studies for your service area. See the following link: www.ecy.wa.gov/watershed/index.html

Here's an Idea

To get an idea of water reliability, graph your monthly water use over time to see how it varies.

Do the same for water depth records. Water depth can fluctuate a great deal, depending on when the depth is measured and the last time the pump ran. Look for long-term or seasonal trends rather than changes from one month to the next.

If you don't have a way to measure water depth, we encourage you to contact a qualified well driller to install a water level recorder.

This information is inexpensive to collect and can provide valuable data about the long-term reliability of your water source.

- Ecology's Instream Resources Protection Program contains important information relative to water availability. To find the rules within your watershed, see the following link: www.ecy.wa.gov/laws-rules/ecywac.html#wr
- Additional sources of water supply information are available from Ecology at www.ecy.wa.gov/programs/wr/ws/wtrsuply.html

Other Resources

- Comprehensive plans prepared by your city or county.
- Studies prepared by local city or county government water resource departments.
- The U.S. Geological Survey has completed studies in some parts of Washington State, including information about streamflow. Select your appropriate county or basin on the their search page: http://wa.water.usgs.gov/pubs/
- Colleges and universities have completed watershed studies throughout the state. Search your local school to find a study near you: www.hecb.wa.gov./Links/colleges/collegesindex.asp

Chapter 4: Demand Forecasting

4.1 Overview of the Demand Forecast Requirement

As communities grow, the demand for water use often grows with it. In order to adequately serve new customers, you must forecast future water demands to make sure you can provide service to growing communities. The water use efficiency (WUE) requirements add criteria for you to consider when preparing demand forecasts.

Demand forecasting is important because it identifies how much water will be needed in the future. You need to collect consumption data on a regular basis from your service meters and use that information to calculate demand forecasts.

4.2 Projecting Demand Forecasts: Factors to Consider

Prepare your demand forecast within your planning document (WAC 246-290-100(4)(b)). The WUE goals you establish may have an effect on the water demand for your water system. When preparing your demand forecast you must project your demand both with and without savings obtained from your WUE program (WAC 246-290-100(4)(c)).

You must include demand forecasting information within your WUE program.

Consider these factors when calculating your future water system supply needs:

- Population (current and future).
- Historic water use patterns.
- Local land use plans.
- Water rates and their impact on consumption.
- Employment (economic development and employment trends).
- Projected water use efficiency savings.

Population

Population forecasts should be based on information approved by your local planning agency or the Washington State Office of Financial Management (OFM). Alternative forecasts may be provided to establish a potential population of high, medium, and low levels and corresponding water demand forecast ranges, or as agreed to by the local planning agency.

Water systems often grow at a different rate than predicted. Review the number of connections added to your water system, and compare this number with the OFM or local population projections.

Historic Water Use Patterns

Historic water use patterns are an important component for accurate demand forecasting. This figure is the basis for future projections. For some water systems, understanding the usage patterns for different categories of customers and seasonal variations may be useful.

Current Land Use, Zoning, and Capacity

Adopted local government comprehensive plans and land use plans, including plans developed under the Growth Management Act, should be used as the basis for forecasting the impact of development on water use.

Water Rates

Rate structures can have an impact on the forecasted demand. You should identify your existing rate structure as part of your planning requirement. Setting rates is the responsibility of the elected governing board, governing body, owner, or the Washington State Utilities and Transportation Commission.

Employment

Employment trends may change as businesses in your community expand. Understand how economic development will affect the demands of your water system. Predicting these changes should be considered when forecasting demand.

Projected Water Use Efficiency Savings

Implementing a WUE program may affect your demand forecast. Projected savings from the WUE program can help you determine whether capital improvements can be delayed or eliminated, and how much additional growth may be permitted. The forecasted reduction in demand should be monitored against actual water use data to monitor conservation success. Adjustments to future projections can be made as actual water use data becomes available.

4.3 Demand Forecast Methods

Demand forecasts are the basis for determining your capacity and infrastructure needs. Depending on the type of planning document and water system size, there are different ways to calculate demand forecasts. The forecast should identify the projected needs of your water system and any contractual agreements you have to provide water to other public water systems.

Water System Plan

If you are completing a water system plan, you must project your demand for the plan approval period and for at least a 20-year period, consistent with the water demand design criteria identified in WAC 246-290-221. More information about design criteria and demand forecasting are available in the *Water System Design Manual* (DOH 331-123).

You must include projections based on two different scenarios (WAC 246-290-100(4)(c)):

1. **Forecast demand *without* projected water savings from your WUE program.** This is the forecast we require in the hydraulic analysis and capital improvement program.

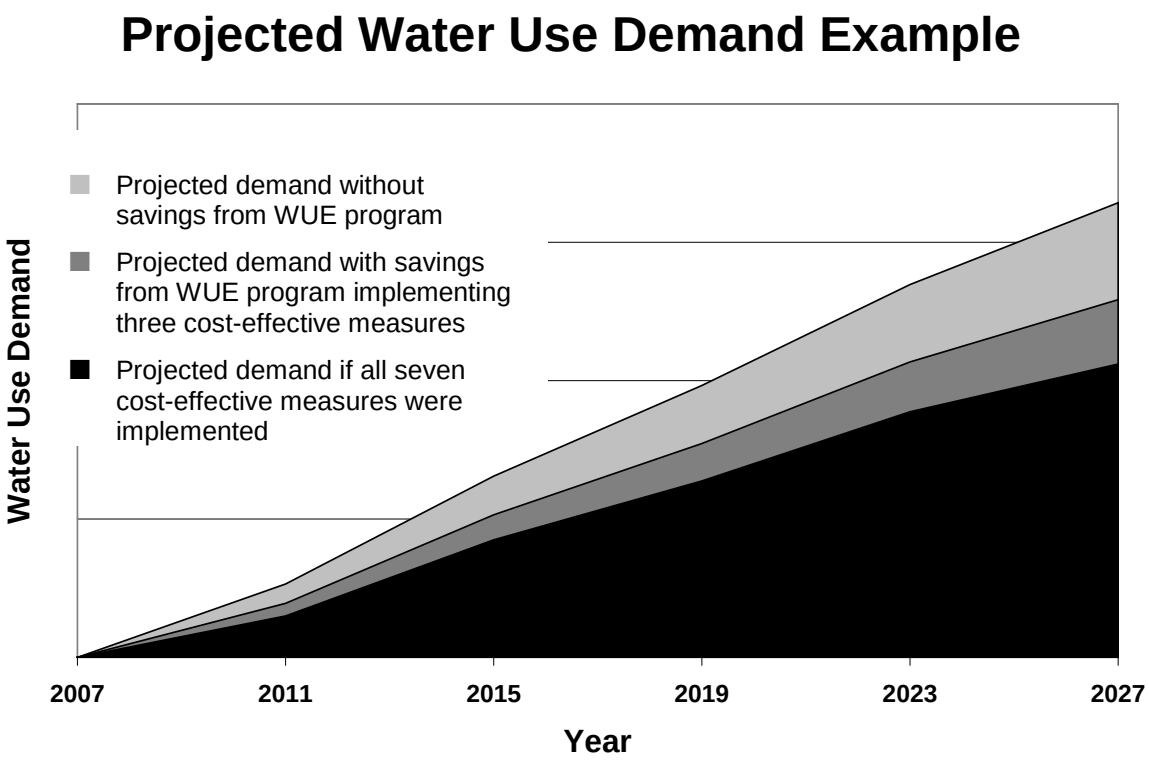
2. **Forecast demand *with* projected water savings expected from your WUE program.** This is based on cost-effective measures implemented by your water system to meet your selected goals.

If you serve 1,000 or more connections, you must provide a third demand forecast scenario (WAC 246-290-100(4)(d)):

3. **Forecast demand if *all* WUE measures deemed cost-effective were *implemented*** (WAC 246-290-810). If you do not choose to implement all of the cost-effective WUE measures you have evaluated to meet your goal, you must complete an additional demand forecast showing what the demand with projected water savings would look like if **all of those measures were implemented**.

All water systems must evaluate or implement WUE measures based on water system size (WAC 246-290-810(4)(d)(i)). The example in Figure 4.1 is for a water system with 53,000 connections in which the customers are using 80 gallons per person per day. The water system determined that seven of 10 measures were cost-effective. Because of the low average daily customer use, this water system chose to implement three of the seven cost-effective measures to meet its goal.

Figure 4.1 Demand Forecast Example for a Water System with 1,000 or More Connections



Small Water System Management Program

If you are completing a small water system management program, you must project demand for all of your approved connections (WAC 246-290-105(4)(k)). If your existing number of connections equals the approved number of connections, simply project your existing demand. Describe the demand projection using your average daily demand (see WAC 246-290-221 for water demand design criteria).

You should base this projection on historical water use patterns, using actual water use and the zoning and land use data from your local government comprehensive or land use plan.

Chapter 5: Water Use Efficiency Program

5.1 Overview of the Water Use Efficiency Program Requirement

Developing your water use efficiency (WUE) program is the foundation for using water wisely. A WUE program is a plan you follow to increase water supply and water demand efficiency. The intent of the plan is to minimize water withdrawals and water use by implementing water saving activities and adopting policies, resolutions, ordinances, or bylaws. Appendices R and S have a large and small system example of WUE programs here in Washington.

Your WUE program should be:

- Consistent with the goals established by the elected governing board or governing body of your water system.
- Designed to achieve the goals by implementing cost-effective water use efficiency measures.

You are required to develop and implement a WUE program as part of your planning document (WAC 246-290-800(2) and 246-290-810(2)). The requirement applies to water system plans submitted for approval under WAC 246-290-100 and small water system management programs developed and implemented **or** submitted for approval under WAC 246-290-105.

It is up to you to get the WUE program done and have it available for review if we request to see it. WUE programs are generally submitted with your planning document. Depending on when your next planning document is due, this would be the time to make sure it is ready for our review. In most cases, we would not request to see your WUE program until you submit your planning document for approval.

Appendix A identifies where to include WUE requirements in your planning documents.

5.2 Process for Developing a Water Use Efficiency Program

Setting goals will help you and your customers use water efficiently. Every goal must have a benchmark that is quantifiable within a prescribed amount of time.
Consider the following eight steps when developing your WUE program:

1. Evaluate the effectiveness of your current and prior water conservation programs.
2. Select cost-effective WUE measures that support your proposed goals.
3. Establish one or more quantifiable goals through a public process.
4. Fund your WUE program. Consider combining financial resources and forming partnerships with other entities, such as nearby water systems, working toward the same goal.
5. Educate your customers about the benefits of conservation.
6. Be prepared to offer incentives or develop ordinances for using water efficiently.
7. Keep your customers involved by informing them of new measures that support your goals.
8. Set up a method to evaluate the effectiveness of your WUE program every few years.

Partnering With Other Water Systems

If you want to lower your WUE program costs, one option is to team up with other water systems. By combining resources, you can save money on developing and promoting educational messages. You may also save by coordinating on bulk purchases of water-efficient devices.

You can learn valuable information from neighboring water systems. Water systems with similar characteristics to yours may have already implemented successful WUE measures. Take the opportunity to learn more from those water systems, because those same measures may work for your water system.

Here's an Idea

You may want to consider coordinating your WUE efforts with neighboring water systems, other types of utilities, and local businesses. Pooling resources can lead to greater water conservation savings.

Partnerships may help you achieve your goal in the following ways:

- Combine financial resources.
- Purchase items in bulk to save money.
- Share technical information and expertise.
- Improve relationships.
- Increase public acceptance and awareness of using water efficiently.
- Provide marketing opportunities for local businesses.

These can be win-win situations for everyone involved.

Partnering With Other Types of Utilities

Another option is to work with other types of utilities. Energy utilities are interested in customers using less energy. Wastewater utilities are interested in decreasing wastewater volume. Consider partnerships that help everyone achieve their goals of efficiency. Your local energy or wastewater utility may already have programs in place, so you may want to partner with them on educational efforts and materials.

Partnering With Local Businesses and Organizations

Partnerships with local businesses and nonprofit organizations can assist with promoting your WUE program. Local nurseries and landscaping companies can showcase native and drought-tolerant plants to their customers with a water-efficient demonstration garden. Hardware stores may highlight water-efficient fixtures and irrigation supplies. Nonprofit organizations interested in water efficiency and water resources may assist by providing bulk-purchasing possibilities, such as the Partnership for Water Conservation at www.partners4water.org/

5.3 What to Include in Your Water Use Efficiency Program

You must include specific information in your WUE program. A thorough analysis of your current WUE program will help you develop an attainable goal, define parameters for cost-effectiveness, and customize the program to meet the needs of your water system. The following 11 items summarize what to include in a WUE program:

1. **Describe your current water conservation program.** Describe what you are currently doing to use water efficiently. This would include your "demand side" measures, such as offering free faucet aerators to your customers; your "supply side" measures such as a recent leak detection survey; or both.

   Water systems with 1,000 or more connections must also estimate the amount of water saved by implementing their current WUE program over the prior 6 years or over the most recent water system plan approval period (WAC 246-290-810(4)(b)).

2. **Describe the WUE goals that support your WUE program and how the goals were established.** Describe how the elected governing board or governing body developed the goals through a public process (WAC 246-290-830). Include a copy of any adopted resolution or other official document that identifies your elected governing board took an action to adopt the goal. See Chapter 7 for a complete description of how to set your goals.

3. **Evaluate WUE measures for cost-effectiveness**. Take some time to research which measures would be a "good-fit" for your customers and evaluate whether they would be cost-effective. See Section 5.6 for guidance on what to include for this part of your WUE program.

4. **Describe the WUE measures you will implement to meet your established goals for the next 6 years.** Identify which measures will be funded to support the program and help you meet your established goals. A minimum number of measures must be evaluated or implemented based on the number of connections for your water system (see Section 5.6).

5. **Describe how you will educate customers to use water efficiently.** General education to your customers about the importance of using water efficiently is required under WAC 246-290-810(4)(f). In order to meet this requirement, you'll need to educate your customers at least once per year. See Section 5.7 and Appendix J for water conservation tips to use for your customers.

6. **Estimate projected water savings from the selected WUE measures.** Every measure you select to implement should result in water savings. You will need to predict:

   - How each measure supports the goal.
   - The amount of water savings that will result from each implemented measure.

   The measures you select establish your WUE program and will affect your future water demand. See Chapter 4 for guidance on how to predict water savings based on different WUE programs.

7. **Describe how you will evaluate the effectiveness of your WUE program.** WUE programs change for a number of reasons. Things such as a drought, budget constraints, changes in demographics, and climate change all may contribute to shifts in water use patterns. Plan to adapt and amend your WUE program to keep it economical and effective.

8. **Evaluate distribution system leakage.** When you submit your planning document, you must report distribution system leakage (DSL) for the previous 6 years or for the entire water system plan approval period if it's longer than 6 years (WAC 246-290-810(4)(i)(i)). A water loss control action plan must be included with your planning document if the rolling 3-year average of DSL exceeds the leakage standard (WAC 246-290-810(4)(i)(ii)).

9. **Evaluate rate structures that encourage water demand efficiency.** The rate structure you implement can have a significant effect on water use and promote water efficiency. See Section 5.4 for guidance on what to include in this part of your WUE program.

10. **Evaluate reclaimed water opportunities.** You must evaluate reclaimed water opportunities if you serve 1,000 connections or more. See Section 5.5 for guidance on what to include in this part of your WUE program.

11. **Describe your water supply characteristics.** Both you and your customers should understand the impact of water use in your community. Awareness of the water supply characteristics within your watershed should help guide your WUE program and goal setting decisions. See Chapter 3 and Appendix C for guidance on what to include in this part of your WUE program.

5.4 Evaluate Your Rates

Implementing a rate structure that encourages efficient use of water is a good way to help educate your customers about the costs of providing safe and reliable drinking water and influence their water use.

You must **evaluate** a rate structure that encourages water demand efficiency (WAC 246-290-100(4)(j)(iv)(B) and 246-290-105(4)(l)). There are a couple of things to consider when performing this evaluation:

- **First, describe your current rate structure**. Some of the most common rate structures do not encourage your customers to use water efficiently. These are declining block rate (charge per unit of water decreases with higher use), flat rate (fixed fee regardless of water use), and uniform rate (same charge per unit of water use).
- **Second, evaluate at least one of the following conservation rate structures:**
  - **Inclining block rates:** Charge per unit of water increases with higher use.
  - **Seasonal rates:** Charge per unit increases during peak usage season; generally targets outdoor summer use.

Evaluate the feasibility of adopting and implementing a conservation rate structure. The evaluation should identify the pros and cons of the chosen rate structure for both your water system and your customers. Describe how rates may help fund your water system, your WUE program, and established goals.

Uniform block rates are more effective than declining block or flat rates because they are based on consumption. We realize that some water systems will see water savings by changing from one of these rate structures to a uniform rate structure. You can only evaluate uniform rates only if you are currently using a declining block rate or flat rate.

Implementing a new rate structure takes time. The elected governing board or governing body should ensure the rate structure will cover all of the needs of your water system.

You should also inform and educate your customers about what the new rate structure is, how it will affect their bill, and why the rate structure change is necessary. Describe exactly what expenses the rate increase will cover, and inform customers that efficient use of water may eliminate or delay the need for costly new sources that would cause an even greater rate increase.

Other things to consider:

- Explain to your customers that if they use water efficiently, then their water bills will not go up. Give them ideas to use water efficiently to prevent higher water bills.
- Establish a rate committee to work with you on proposing a new rate structure.
- Prepare mock bills so your customers can see how the new rate structure will affect their bill before they actually have to pay the higher amount.
- Provide historical use data in water bills to show customers how much they used previously.
- Washington Utilities and Transportation Commission regulated water systems may have additional requirements to follow. For more information, contact Utilities and Transportation Commission by email at consumer@wutc.wa.gov or 1-800-562-6150.

5.5 Evaluating Reclaimed Water Opportunities

The use of reclaimed water can help balance the water use demands of water systems, leading to greater water savings. We support the use of reclaimed water for nonpotable purposes such as irrigation, industrial uses, and groundwater recharge. Using reclaimed water saves potable water for drinking water purposes and is an efficient use of the state's water resources.

Water systems with 1,000 or more connections must collect information on reclaimed water opportunities and include that information in their planning documents. (WAC 246-290-100(4)(f)(vii)). When evaluating opportunities for the use of reclaimed water, you should identify:

- Where reclaimed water could potentially be used, such as parks, golf courses, groundwater recharge facilities, and car washing facilities.
- Where reclaimed water production facilities exist and the locations of reclaimed water distribution lines (purple pipes).
- Any barriers to the use of reclaimed water, such as cost, permitting issues, water rights mitigation, and local regulations that govern the use of reclaimed water.

Did you know?

Saving Water Reduces Other Utility Bills

Many people forget that when they save water, they also save money on sewer fees and energy costs.

If you use less hot water when you're washing the dishes or taking a shower, you're also saving on your energy or gas bill.

Sewer rates, often based on water use, can be as much as two to four times higher than water rates. So, by using less water you also save money on your sewer bill.

- Contractual obligations and agreements that limit the use of reclaimed water.
- Where reclaimed water is used or proposed within your water service area. Provide a description and estimate usage.
- Your efforts to develop existing or new opportunities for the use of reclaimed water.

The use of reclaimed water is considered a WUE measure, or multiple WUE measures if you use it for multiple purposes (see Section 5.7).

5.6 Evaluation of Water Use Efficiency Measures

You must evaluate or implement a specified number of measures specifically targeted for your customers. Each evaluation is related to the cost-effectiveness of the measure. The number of measures you must evaluate or implement is based on the size of your water system. Larger water systems must evaluate or implement more measures. Table 5-1 identifies the number of measures you must evaluate or implement based on your number of existing connections. This number represents a minimum number of measures. You may evaluate or implement additional measures if necessary to meet your goals.

Remember, you must evaluate measures that support the goal you are proposing or have established for your customers. Each measure you select to implement must have an implementation schedule (WAC 246-290-830(6)(d)).

Supply side measures, such as leak detection surveys or replacing meters are not one of the minimum number of measures you are required to evaluate or implement. These types of measures must be implemented in order to reduce water loss and achieve the leakage standard.

Measures must be evaluated for cost-effectiveness from the following categories, if applicable to your water system (WAC 246-290-810(4)(d)):

- Indoor residential
- Outdoor
- Industrial/commercial/institutional

Table 5-1 Water Use Efficiency Measures Based on Total Number of Service Connections

Number of Connections	Less than 500	500 - 999	1,000 - 2,499	2,500 - 9,999	10,000 - 49,999	50,000 or more
Water Use Efficiency Measures	1	4	5	6	9	12

On a Budget?

Choosing Inexpensive Measures to Achieve Your Goals

Does your water system operate with limited financial resources and staff?

Choosing the right measures to achieve your WUE goals can be a challenging task if you've never done it before. For smaller water systems with less than 1,000 connections, we recommend that you implement at least one quantifiable measure.

Inexpensive quantifiable measures include things such as faucet aerators, low-flow showerheads, and hose repair kits. You don't need to buy one of these for every customer, consider purchasing enough quantities to reach 50% of your customers and have them available for pick-up to save on mailing costs.

Some of the most inexpensive measures (such as education) are the most difficult to quantify. Here are some commonly used WUE measures that water systems implement:

- Sending water savings tips to your customers in the annual water quality report.
- Conservation rate structures.
- Educating customers to identify and repair leaks in and around their homes.
- Sending our *Stop Water Waste* brochure once a year.
- Educating customers how to save money on water and energy bills by installing WaterSense fixtures and appliances.
- Showing consumption history on water bills.
- Placing water saving educational materials on their website.

Evaluation Criteria

If you choose to implement a WUE measure, you don't have to evaluate it for cost-effectiveness. Even though you don't have to evaluate the measure for cost-effectiveness, an evaluation of water savings may still be necessary to forecast demand. Knowing the expected costs to implement a measure will help you develop your budget. We encourage you to implement WUE measures that will meet your goal and support your WUE program.

Water systems with less than 1,000 connections—Describe how you evaluated any measures you chose not to implement.

Water systems with 1,000 or more connections—There are three evaluations a water system must consider when determining if a WUE measure is cost-effective (WAC 246-290-810(4)(d)(iv)). They include:

1. **Water system's perspective:** This looks to see if it would be cost-effective for the water system. Water systems must include the marginal costs of producing water. Marginal costs are the costs associated with developing supply to meet future demand and may include such costs as a new well, new distribution or transmission lines, new storage, or a new booster station. In other words, the benefits of using water more efficiently should be quantifiably measured against the potential costs of developing new sources of supply.

2. **Cost-sharing perspective:** This looks to see if it would be cost-effective if the costs were shared with other entities, such as neighboring water systems, water conservation partners, sewer districts, regional partners, wholesale water agencies, and energy utilities. Cost sharing can reduce WUE program implementation costs and give water systems a way to identify measures that will also benefit other entities with common interests.

Here's an Idea

Evaluating Cost Effectiveness

The Partnership for Water Conservation has a free "Water Conservation Measures List and Measure Evaluation Tool" for its members. This tool will help you choose cost effective measures and estimate water savings.

For more information about the Partnership for Water Conservation visit:

www.partners4water.org/index.html

3. **Societal perspective:** This looks to see if it would be cost-effective if all costs and benefits were included. Water systems should begin by identifying some of the other benefits that may occur by implementing the WUE measures. This may include environmental, recreational, or aesthetic benefits such as more water in the river. This can be a quantitative or qualitative evaluation because these benefits are more difficult to quantify.

What is a credible cost-effective evaluation?

A cost-effective analysis is used to compare WUE measures on a dollar value basis. Identifying the benefits and costs associated with each WUE measure will help you determine which measures should be implemented to meet your goal. A WUE measure is cost-effective if the benefits exceed the cost.

A simple way to do this is to look at the difference between the per gallon cost of conservation and the per gallon cost of supply.

A credible evaluation of each measure should consider:

1. Cost of the measure:
   - Materials
   - Rebates
   - Contractor costs
   - Labor
   - Staffing
   - Advertising
2. Estimate of savings:
   - Number of units to be installed
   - Water savings per unit

3. Cost benefit comparison
4. Net benefit of conservation

More information is available in the U.S. Environmental Protection Agency's Water Conservation Plan Guidelines at www.epa.gov/watersense/pubs/guide.html

What is WaterSense?

WaterSense is a program sponsored by the U.S. Environmental Protection Agency (EPA). Much like the ENERGY STAR symbol for energy-efficient products and practices, WaterSense is the symbol for water efficient products, services, and practices.

WaterSense helps your customers identify products that meet EPA's criteria for water efficiency and performance. WaterSense labeled products, such as washing machines, faucets, and showerheads, use 20% less water than standard products. **Best of all, they work without sacrificing performance!** You may remember that many "low-flow" toilets from the 1990s performed terribly. The WaterSense labeled water-saving products of today are tested to ensure water efficiency **and** performance. Look for

WaterSense labeled products and start saving water today!

Why You Should Join WaterSense

First of all, it's free! Second, it's very likely that your customers aren't aware that purchasing WaterSense certified fixtures and appliances are guaranteed to save them water. Third, it's an easy way to help you achieve your Water Use Efficiency (WUE) goals.

Remember, the WUE rule says that you must educate your customers. As a Water Sense partner, you'll receive a free educational tool kit available only to partners to help you inform your customers about the WaterSense program. Use these free resources to meet the WUE educational requirement!

How to Become a WaterSense Partner

Visit www.epa.gov/watersense/partners/promotional.html for more information

5.7 What Qualifies as a Water Use Efficiency Measure

A WUE program must include both supply and demand efficiencies. Certain measures must be implemented while other measures must be evaluated. Measures may include water efficient devices, actions, business practices, or policies or ordinances that promote efficient water use.

Supply-side measures (such as leak detection surveys, installing or replacing meters, and water audits) that support supply-side goals to reduce leaks don't count towards the minimum number of measures listed in Table 5-1 that must be evaluated or implemented in WAC 246-290-810(4)(d)(ii). These are considered activities that your water system implements to understand and control water loss.
The measures you evaluate or implement must focus on encouraging your customers to use water efficiently. The following mandatory measures don't count towards the minimum number of measures listed in Table 5-1.

Mandatory Measures You Must Implement or Evaluate

You must implement the following WUE measures:

- Install production (source) meters—WAC 246-290-496(1).
- Install consumption (service) meters—WAC 246-290-496(2).
- Perform meter calibration—WAC 246-290-496(3).
- Implement a water loss control action plan to control leakage—WAC 246-290-820(4).
- Educate customers about how they can use water efficiently at least once per year (see more about education on the next page)—WAC 246-290-810(4)(f).

You must evaluate the following WUE measures:

- Evaluate rates that encourage water demand efficiency (WAC 246-290-100(4)(j)(iv) and 246-290-105(4)(l)). See Section 5.4 for more information.
- For water systems with 1,000 or more connections, evaluate reclamation opportunities (WAC 246-290-100(4)(f)(vii)). See Section 5.5 for more information.

Does Your Existing WUE Program Already Meet the Minimum Number of Measures?

Many activities from your current WUE program may already qualify as implemented measures. Here are a few that you may currently be implementing, and they would count towards the minimum number of measures listed in Table 5-1:

Conservation Rate Structures

You must evaluate a rate structure to increase water demand efficiency (WAC 246-290-100(4)(j)(iv) and 246-290-105(4)(l)). Because these sections only require an evaluation,

implementing a conservation rate structure counts as a WUE measure (WAC 246-290-810(4)(d)). We encourage you to adopt rates that encourage customers to use less water while at the same time fund your WUE program and maintain revenue.

Reclaimed Water
Water systems with 1,000 or more connections must evaluate reclamation opportunities (WAC 246-290-100(4)(f)(vii)). Because this section only requires an evaluation, the actual use of reclaimed water counts as a WUE measure (WAC 246-290-810(4)(d)). The use of reclaimed water is considered a WUE measure or multiple WUE measures if you use it for multiple purposes. See Section 5.5 for additional information about reclaimed water.

Notifying Customers About Leaks on Their Property
Educating your customers about fixing the leaks within their homes or on their property counts as a WUE measure (WAC 246-290-810(4)(d)). Also, if you have a program that notifies customers of unusually high water bills that may be due to a leak on the customer side of the meter, it counts as a WUE measure.

Educating Your Customers
You must educate your customers about the importance of using water efficiently. This may include communicating this message through a newsletter, customers' bills, or your annual consumer confidence report (WAC 246-290-810(4)(f)). If you educate your customers more than once per year, it counts as a WUE measure. This would include educational measures, such as school programs, advertising (such as bus ads), or consumer education at fairs (WAC 246-290-810(4)(d)).

Education should focus on informing your customers about hardware measures that are guaranteed water savers. Hardware measures (such as telling your customers to look for the WaterSense label) are those that can be easily quantifiable and rely less on behavior changes (such as turning off the faucet when brushing teeth).

Did you know?

Estimated Faucet Leakage Rates (number of drips)

60 drops/minute = 192 gallons/month

90 drops/minute = 310 gallons/month

120 drops/minute = 429 gallons/month

2010 EPA WaterSense Promotional Partner of the Year

Cascade Water Alliance

With only one full-time staff member overseeing water conservation programs, Cascade Water Alliance successfully used its WaterSense partnership to help stretch limited resources and expand into an even more comprehensive water conservation program for its eight member agencies in King County, Washington. Collaborating with local retailers and professionals, Cascade was able to promote WaterSense and the importance of water efficiency to the 400,000 residents and 22,000 businesses it serves, without breaking the bank.

Cascade worked with nearly 100 plumbers and prominent retailers including The Home Depot, Lowe's, and Ace Hardware to help make WaterSense a permanent fixture in more than 2,000 households and local businesses. Cascade promoted its toilet rebate program by working closely with these organizations and even filmed an informational video to educate residents about the benefits of WaterSense labeled toilets.

Cascade also recognized the importance of educating consumers at the point of purchase and provided free training for retailer staff; issued point-of-purchase materials; and conducted regular, in-store visits, which helped establish strong relationships and encouraged promotion of the WaterSense label. According to sales staff, some retailers estimated that thanks to Cascade's rebate program, 75 to 90 percent of their toilet sales are WaterSense labeled toilets—up from virtually zero a couple years ago. Ninety-four percent of customers surveyed by Cascade said their new toilets perform as well as or better than their previous models, affirming EPA's performance criteria for WaterSense labeled products. Cascade also collaborated with Seattle Public Utilities to achieve water savings outdoors, offering $50 rebates to consumers hiring primarily WaterSense irrigation partners to install rain sensors.

Cascade also took WaterSense on the road with the WaterSense Road Show—a traveling display that visits public events distributing free water-saving plumbing fixtures and educating residents about using less with WaterSense. During WaterSense's Fix a Leak Week, Cascade distributed more than 100,000 toilet leak detection kits by mail to encourage families to check for leaks and look for the WaterSense label when considering new fixtures. The leak detection kit won the

The more often you educate your customers, the more likely you will change your customer's behavior about using water efficiently and help you meet your goal. Whenever possible, reward your customers for their efforts to use less water. Help them understand they are part of the solution. When educating your customers, explain to them:

- Why water conservation is necessary (such as protecting future water supplies).
- The financial benefits of conserving water (such as how it might save them money on their utility bills).
- What might happen if water is not conserved (such as mandatory restrictions during a drought).
- What your customers can do to help you achieve your goal (such as providing tips on how to save water and **what types of water saving devices achieve long-term savings**).

Customer Class
If a specific WUE measure is being implemented for different customer classes, it counts as multiple WUE measures. For example, toilet rebates across three customer classes (single family, commercial, and multifamily) count as a measure for each customer class, for a total of three implemented measures.

For more examples of WUE measures, see Appendix B.

5.8 Water Use Efficiency Programs for Nonmunicipal Water Suppliers

While most Group A community water systems are considered municipal water suppliers, many noncommunity water systems aren't municipal water suppliers. It is in the best interest of all water systems to use water resources wisely.

Even if you don't qualify as a municipal water supplier, as a public water system, **you are still required to have a basic WUE program within your planning document (WAC 246-290-100(4)(f)(i) and 246-290-105(4)(g))**.

See Appendix U for an example of what to include in your WUE program if you are a nonmunicipal water supplier. The requirements are different depending on whether you must prepare a small water system management program or water system plan.

Chapter 6: Distribution System Leakage

6.1 Overview of the Distribution System Leakage Requirement

The distribution system leakage (DSL) standard is a significant element of the water use efficiency (WUE) requirements. Collecting source and service meter data is the best way to obtain accurate water loss information and provides the most accurate information to calculate DSL.

Leaky water systems are costly. Significant revenue is lost through leaks, including:

- Energy costs for pumping water.
- Water treatment costs.
- Water that could be sold to other customers.

Water is a precious and limited resource. You should make every effort to keep leakage to a minimum and strive to meet the DSL standard. Compliance with the leakage standard is based on a 3-year average.

In order to calculate DSL, you must first install service meters on all existing direct service connections (WAC 246-290-820(2)(a)). Until then, report your progress towards installing meters and all actions taken to minimize leakage in your annual WUE report (see Section 2.6).

6.2 Water Loss Terminology

Water systems have been using the term "unaccounted-for water" for many years, yet the term does not have a standardized definition. All water should be accounted for, nothing should be unaccounted for.

The WUE requirements use the terms "authorized consumption" and "distribution system leakage." In order to account for water loss, all water that enters the distribution system must go into the authorized consumption or distribution system leakage category.

Authorized Consumption

Authorized consumption is defined as the volume of water **authorized for use** by the water system. All unauthorized uses and any water that cannot be tracked is considered DSL (WAC 246-290-820(2)(c)).

If authorized uses are tracked and estimated, these volumes of water can be added into the authorized consumption category. Any authorized water not estimated will be considered DSL, so it is important to track these events.

You cannot estimate consumption by unmetered customers/connections to the water system such as residential homes or city parks. Even though these are authorized uses, they must be metered and will count as DSL until a meter is installed. These types of existing connections to your water system must have a meter installed by January 22, 2017.

Some examples of unmetered authorized uses that can be tracked and estimated include:

- Maintenance flushing of the water system
- Cleaning of water tanks or reservoirs
- Fire-fighting (hydrant)
- Street cleaning

Distribution System Leakage

All water that is not authorized consumption is considered DSL. DSL is defined as the water lost from the distribution system and includes both apparent losses and real losses. Apparent losses include things such as theft, meter inaccuracies, and data collection errors. Real losses are the physical losses from the distribution system and include such things as reservoir overflows, leaky valves, and water main breaks. Neither apparent nor real losses are authorized uses of water, therefore they are considered leakage even if they are not actual "leaks."

Some examples of water loss that you would put in the DSL category include:

- Theft
- Meter inaccuracies
- Meter reading errors
- Data collection errors
- Calculation errors
- Water main breaks

Transmission Line Leakage

Some water systems have extensive transmission lines. You may exclude transmission line losses from the DSL calculation when there is a production meter located upstream of the entry to the distribution system (WAC 246-290-820(2)(b) and 246-290-496(1)(a)). If an additional production meter is not installed upstream of the distribution system, the entire transmission line losses are considered DSL (WAC 246-290-820(2)(c)).

If you are excluding transmission line leakage from DSL, you must describe transmission line leakage and the efforts taken to minimize leakage in your planning document (WAC 246-290-810(4)(i)(iii)). This does not replace any source meter requirements or waste of water requirements adopted by the Department of Health or the Department of Ecology.

6.3 Calculating Distribution System Leakage

Annual DSL is calculated in both percentage and volume. At a minimum, collect:

- The amount of water produced from the source(s).
- The amount of water purchased from another supplier.
- The amount of water consumed by your metered customers and any other estimated authorized use.

Below are the equations used for calculating the volume and percent DSL.

Note: When submitting your annual WUE report online, you don't need to calculate DSL, the database will do it for you.

Calculating Volume Distribution System Leakage

To calculate volume DSL, use the following equation:

Volume DSL = TP - AC
Report volume DSL in gallons

Calculating Percent Distribution System Leakage

To calculate percent DSL, use the following equation:

Percent DSL = ((TP - AC) / (TP)) x 100
Where:
DSL = Percent (%) of distribution system leakage
TP = Total water produced and purchased
AC = Authorized consumption
Round your percentage to the nearest tenth.

Use Appendix D and the following three guidelines to help you determine your TP and AC for the year.

1. Add up the amount of water produced from all sources and any water purchased from other water systems.
    a. Most water systems will use source meters for determining water produced.
    b. Water systems excluding transmission lines will use the production meter located prior to the distribution system.
    c. Other water systems will only use the amount of water purchased through an intertie, if this is the only source of water.
    d. Complex water systems may use all of the above.

    This is your total production and purchased (TP).

2. Add up the following categories to determine authorized consumption:
    a. Amount of water delivered to customers from service meters.
    b. Amount of water sold to another water system.
    c. Estimated authorized consumption (for example, fire flow and flushing of water mains). When calculating DSL you may subtract unmetered or unbilled authorized use from your TP if these events are tracked and estimated. Events not tracked are considered DSL.

    This is your authorized consumption (AC).

3. Calculate volume and percent DSL.

Table 6-1 shows how data might be used to calculate DSL. Your water system may have different data to include or exclude in your DSL calculation.

Table 6-1: Water System Distribution System Leakage Calculation Example

Add up the amount of water produced from all sources	5,000 MG
Add any water purchased from other water suppliers	500 MG
TOTAL PRODUCTION AND PURCHASED (TP)	5,500 MG
Add up the annual amount of water delivered to customers from your service meters	4,300 MG
Add any water sold to another water system	0 MG
Add all estimated authorized uses (fire flow, flushing of mains, and other authorized uses)	
Flushing	3 MG
Fire flow	1 MG
TOTAL AUTHORIZED CONSUMPTION (AC)	4,304 MG
Volume DSL = 5500—4304 = 1,196,000,000 gallons[3]	
Percent DSL = (5500—4304)/5500 x 100 = 21.7%[4]	

[3] Report volume DSL in gallons.
[4] When calculating percent DSL, round up or down to the nearest tenth.

6.4 Alternative Methods to Calculating Distribution System Leakage

WUE requirements allow alternative methodologies for calculating DSL. The alternative methodology allows you to use a different formula for calculating DSL—it does not replace the service meter requirement. We must approve any alternative methodologies that provide a better evaluation of DSL. Once approved, the alternative methodology can be used statewide. At this time, there are no department-approved alternative methods to evaluate DSL, so use the formula provided in WAC 246-290-820(2).

Any alternative methodology must be (WAC 246-290-820(3)):

1. Approved by the Department of Health.
2. Published as a standard or specification by one of the following agencies:
    - Environmental Protection Agency.
    - American Water Works Association.
    - American Public Works Association.
    - American Society of Civil Engineers.
    - Department of Health.
3. Contain numerical standards so that compliance with the DSL standard can be determined.

If you are exempt from installing service meters (see Chapter 2), you are not exempt from meeting the DSL standard. A good way to determine leakage in the absence of service meters is by conducting night flow testing. Measuring the amount of water used between the hours of 2:00 and 4:00 a.m. is a good indicator of the extent of your water loss.

Here's an Idea

Use AWWA's free water audit software to conduct a standard water audit

Water audits are one of the most useful tools to determine your water loss. The Water Loss Control Committee of the American Water Works Association created free water audit software in 2006 in order to standardize the auditing process and provide you with a user-friendly tool to conduct a standard water audit.

Once you understand where your losses are coming from through completion of a water audit, you can focus your efforts on reducing leakage to obtain real and meaningful water savings.

Visit AWWA's web site to download the free water audit software:

http://www.awwa.org/Resources/WaterLossControl.cfm?ItemNumber=48511&navItemNumber=48158

Two good references for controlling water loss:

- *Water Loss Control-Second Edition*, Thornton, Sturm, and Kunkel, McGraw Hill Company, 2008.
- AWWA's M36 Manual-Third Edition, 2010

6.5 Distribution System Leakage Standard Compliance

In order to reduce leakage within your distribution system, we expect you to troubleshoot where your apparent losses are occurring (such as inaccurate meters) and make efforts to find and repair leaks (such as conducting a leak detection survey).

After 3 years of collecting leakage data, calculate the average of those 3 years. Compare this 3-year average to the DSL standard. This is the compliance point for meeting the DSL standard. For every year thereafter, DSL is calculated using a rolling 3-year average[5] from the previous 3 years. When calculating percent DSL, round up or down to the nearest tenth.

There are four ways to comply with the DSL standard.

1. **Ten percent or less DSL** (WAC 246-290-820(1)(b)(i))
   WUE requirements establish a 10 percent or less DSL standard based on a 3-year rolling average. If your water system meets this standard, you are in compliance.

2. **Alternative methodology** (WAC 246-290-820(1)(b)(ii) and 246-290-820(3))
   Water systems that use an alternative methodology to calculate leakage must meet the numerical standard established for that alternative methodology. We will develop compliance and action levels to determine whether a water system is in compliance.

3. **Twenty percent or less for water systems with less than 500 connections** (WAC 246-290-820(1)(b)(iii) and 246-290-820(5))
   Water systems with less than 500 connections are allowed up to 20 percent DSL **only if they specifically request the higher level of leakage and submit the following evidence to the department**:
   - Production volume.
   - DSL volume.
   - A leak detection survey has been completed in the most recent plan approval period for water system plans and in the last 6 years for small water system management programs. .
   - All leaks found have been repaired.
   - Unable to find more leaks in the water system.
   - Efforts to minimize leakage are part of the WUE program.
   - Justification of the technical, economical or water system characteristics for the higher level of leakage.

[5] For example, after the third year of reporting leakage, you will take the average of years 1-3. In year 4, average leakage is based on years 2-4, and so on.

4. **Water loss control action plan** (WAC 246-290-820(1)(b)(iv) and 246-290-820(4))
   If your water system exceeds the DSL standard, you must develop and implement a water loss control action plan (see Section 6.7 for an example). If you have developed and are implementing your water loss control action plan, you are in compliance. Completing the International Water Association's water audit as part of your WLCAP will result in compliance as well. If your water system exceeds the DSL standard, summarize your water loss control efforts in the annual WUE report. (See Section 6.7 for more information about the water audit.)

6.6 Reducing Leakage

You comply with the DSL standard if you develop and implement a water loss control action plan. Depending on the amount of leakage, you may need to take aggressive action to get leakage under control.

There are three categories of water loss control action plans:

For water systems greater than 10 and less than 20 percent DSL, you must:

1. Assess data accuracy.
2. Assess data collection methods and errors.

For water systems between 20-29 percent DSL, within 12 months you must:

3. Complete 1 and 2 above.
4. Implement field activities to reduce leakage.

For water systems with 30 percent or greater DSL, within 6 months you must:

5. Complete steps 1, 2, and 4 above.
6. Implement additional water loss control methods to reduce leakage.

Water Loss Control Methods

Water loss control methods are the activities your water system implements to reduce leakage in the distribution system. The following list of water loss control methods can help you lower DSL:

- Conduct a water audit (we recommend you use the IWA Water Audit).
- Conduct a leak detection survey.
- Repair leaky storage tanks.
- Calibrate or replace meters.
- Synchronize production and consumption meter reading schedules.
- Develop a schedule and budget for replacing old distribution lines.
- Control theft of water.

Implementing water loss control methods will help you achieve the DSL standard and identify actions you can take to reduce wasted water. Once losses are controlled, you will benefit from lower operating costs, lower energy bills, and increased safety and reliability in providing water to your customers.

6.7 Water Loss Control Action Plan: What to Include and How to Submit

Your water loss control action plan must be submitted within your planning document, or if requested by us (WAC 246-290-820(4)). **We recommend that you summarize your water loss efforts within your annual WUE report.**

At a minimum, include the following in your water loss control action plan:

- Water loss control methods you will implement to strive for the DSL standard.
    - Such as leak detection, meter replacement, or perform a water audit.
- An estimate of how long it will take you to achieve the standard.
    - You may want to establish a goal to identify a benchmark.
- A budget that demonstrates how you will pay for controlling leakage.
    - Consider a rate increase, to apply for loans and grants, or any other means to pay for infrastructure improvements.
- Any technical or economic concerns that will prevent you from complying with the standard.
    - If you feel that you cannot meet the DSL standard, you must explain what factors are keeping you from complying. A strong case will need to be made in order to be credible.

Example of a Water Loss Control Action Plan

Our water system established a supply-side goal to reduce DSL to less than 10% by 2010 or within 3 years after becoming fully metered. We finished installing water meters on all connections and city-owned facilities in April 2010. The DSL was at 20% for 2008 and was reduced to 19.2% in 2009; which is a savings of 1 MG per month on average.

We have been very active in taking steps to help reduce the DSL, such as repairing leaks when they are found or when we are notified, and replacing older water lines and leaking valves. We also set up a meter replacement schedule for the larger outdated commercial and industrial water meters, which is expected to be completed in 2012.

As a result of replacing these meters, we expect our revenue to increase from more accurate measurements. The city has taken steps to verify the collection of the monthly data and to have the source meters calibrated for accuracy.

We plan to propose a 1% rate increase to our city council this spring to cover the expenses of needed infrastructure improvements to reduce DSL. We are concerned with the amount of DSL and committed to finding, repairing, and meeting the established system distribution leakage standard by 2013.

Complying with the DSL Standard by Completing the International Water Association Water Audit

In 2010, AWWA published their M36 Manual that adopted the International Water Association (IWA) water audit methodology to evaluate water loss. Completing the IWA water audit is the best action you can take to demonstrate compliance with the DSL standard. We think it's an appropriate way to show that you understand what to do to control water losses and meets the intent of the WUE rule. This new water audit method is, in our opinion, currently the best available option for you to evaluate water loss.

Meter Inaccuracies are Considered in the IWA Water Audit

If you're concerned about meter inaccuracies, the IWA water audit method recognizes and allows for customer meter inaccuracies across the entire distribution system when evaluating water loss. This will address any concerns some water utilities may have regarding upsizing of meters to meet residential fire sprinkler flow requirements.

How to Demonstrate Compliance

You can prove that you are serious about reducing DSL within your water system by completing the IWA water audit. Upon completing the audit, you will receive a score that identifies focus areas for you to plan for and implement in order to reduce water losses. Use the planning tool to establish timeframes and benchmarks for achieving water loss reductions.

You will be in compliance with the DSL standard, regardless of your level of DSL, if you complete the IWA water audit as part of your water loss control action plan.

Follow this step-by-step process to complete the IWA water audit and include it in your water loss control action plan:

1. Collect annual total production and authorized consumption as you normally do each year.
2. Enter that information in the online reporting database.
3. If your calculated 3-year average DSL is over 10%, then you must complete a WLCAP.
4. You have the option of completing the IWA water audit within your WLCAP to demonstrate compliance with the DSL standard.

The WLCAP must include:

- A completed IWA water audit.
- Water loss control methods you will implement to strive for the DSL standard.
- An estimate of how long it will take you to achieve the standard.
- A budget that demonstrates how you will pay for controlling leakage.
- Identify actions and benchmarks to achieve water loss reductions as a result of completing the IWA water audit.
- Implement the recommended "functional focus areas" within the "water loss control planning guide" of the IWA water audit based on your individual water audit data validity score.
- Establish a supply-side goal, including a timeframe, to achieve an infrastructure leakage index (ILI) of 3.0 or lower.
- Implement water loss control activities that strive to achieve an ILI of 3.0 or lower.
- Include a copy of the IWA water audit results within the WUE Program of a water system plan or small water system management program or to the department upon request.

AWWA's M36 Manual Overview

- Clear steps to compile the IWA water audit.
- Rational terms, definitions, and performance indicators that give water utilities objective ways to assess their water loss standing and reliably plan loss control activities.
- Worksheets, sample calculations, and references to AWWA's free water audit software.
- Techniques to capture more revenue by controlling apparent losses in customer metering and billing operations, as well as unauthorized consumption.
- Innovative technologies to move from reactive, "break and fix" leakage response to proactive leakage management featuring component analysis, pressure management, leak noise logging and other advanced technologies: successful approaches to minimize unnecessary source water withdrawals and excessive water production costs.
- Structured guidance on planning the loss control program.
- Considerations for small water utilities.
- Case study accounts from small, medium, and large water utilities.
- View this website to learn more about the IWA water audit method:

http://www.awwa.org/Resources/WaterLossControl.cfm?ItemNumber=48511&navItemNumber=48158

Chapter 7: Goal Setting and the Public Forum

7.1 Overview of the Goal Setting Requirement

One of the most important steps in using water efficiently is setting goals that can be measured. Goals provide a benchmark for achievement and play a significant role in defining the success of your water use efficiency (WUE) program. You must set your own goals through a public process (WAC 246-290-830(4)(a) at least every 6 years.

The Impact of WUE Goals/Programs on Utility Revenue
There is no question that implementing a WUE program and goals to reduce customer consumption has the potential of reducing your revenue. While this may be the case, it's no excuse to not use water efficiently and should not prevent you from developing an effective WUE program. Since you are required to put together a WUE program and goals, you'll need to take a serious look at the effect on revenue and find a way to keep those dollars coming in the door to maintain financial viability.

Here are some tips to create a successful path forward:

- Before you establish a goal, recognize that you may reduce revenue, and consider a rate increase. You may need to re-think your rate structure entirely and adopt a tiered rate approach.
- Consider rate increases on those customers that use the most water, this will help you obtain the revenue you need. Reward those customers that use the least water by not raising their rates at all, if possible.
- Determine the revenue effect of a WUE goal before you establish it. For example, if you establish and achieve a 5% reduction goal over 5 years, how will that affect your revenue?

7.2 Goal Setting Considerations

Goals should be designed to use water more efficiently. You are encouraged to adopt goals that help you and your customers use water in the most efficient way possible. Understand your water supply characteristics, infrastructure improvements, and future needs before establishing goals.

Each goal must identify the measurable water savings that will be achieved at a specific time in the future. See Appendix I for 15 examples of goals that meet the regulatory requirements.

You must consider the following information and make it available to the public prior to the goal setting public forum[6] (WAC 246-290-830(4)(d)):

1. Your existing WUE program (see Chapter 5 and WAC 246-290-810(4)):
   - Water saved as a result of implementing WUE measures over the last 6 years (1,000 or more connections only).
   - Current goals.
   - WUE measures currently implemented.
   - WUE measures that have been evaluated.
   - How you are educating your customers (see Section 5.7).
   - A projection of how much water you can save by implementing your chosen WUE measures.
   - How you will evaluate your WUE program.
   - Distribution leakage information.
   - The water loss control action plan, if required (see Section 6.7).
2. Any previous annual WUE reports (see Chapter 8).
3. Water supply characteristics information (see Chapter 3 and Appendix C).
4. Water demand forecasts information (see Chapter 4).
5. Summary of any comments received about the proposed goal and how you considered these comments prior to formally establishing the goal.

[6] In order to make the information easily accessible by the public, the information should be available directly from the water system (place it on your Web site, if you have one). You might also consider sending a copy of the information to your local library.

Process for Establishing a Goal

When getting ready to propose a goal, there are a few key things to think about in order to move the process along smoothly (see Appendices H, I, and O for more on goal setting). Examples for each step are provided to help you start developing your own goal setting strategy:

- Define your objective for proposing the goal, based on the information listed above.

  Example: Reducing per capita consumption will help us provide better service, save money, and may allow us to add more connections for future growth.

- Propose measurable water saving goals that will support your objective.

  Example: Demand Side Goal—Reduce our annual consumption per residential connection by 3 percent over a 10-year period.

- Establish a timeframe for achieving the proposed goals.

  Example: Our demand forecast shows a need for new connections within 10 years therefore, we have established a 10-year timeframe to achieve our goals.

- Determine the cost-effective WUE measures to support the goal.

  Example: Faucet aerators, conservation rate structures, and educational outreach at the county fair are the cost-effective measures that will help support our goal.

- Determine funding source for the WUE measures to achieve the goal.

  Example: We will switch from a flat rate structure to an inclining block rate structure for water use.

- Make information available to the public at least 2 weeks before your public forum.

  Example: An information packet is available for viewing at our billing office and local library.

- Provide public notice 2 weeks prior to goal setting public forum.

  Example: Public notice is posted on the Office of Drinking Water's website, the local library, published in the local newspaper, and on the utility's website.

- Hold a public forum and consider public comments.

  Example: Public forum held at the town meeting hall, all public comments recorded.

- Establish goals.

  Example: After considering public comments, our elected governing board establishes the proposed goal and will make slight water rate increases every year over the next 10 years.

7.3 Goal Setting Authority

Goals must be established by the elected governing board or the governing body of the water system (WAC 246-290-830(1)). The elected governing board or the governing body has the flexibility to establish its own goal to achieve its objective.

A governing body is "the individual or group of individuals with ultimate legal responsibility for operational, technical, managerial, and financial decisions for a public water system" (WAC 246-290-010). Examples include the president of the homeowners association or the owner of the water system.[7]

An elected governing board is also defined in WAC 246-290-010 as "the elected officers with ultimate legal responsibility for operational, technical, managerial, and financial decisions for a public water system." Examples include your city council, board of county commissioners, or elected water board.

7.4 Regional Program Goals

You may find regional goals established for a particular area will best meet your needs. If a regional goal is proposed, your governing board or elected governing body must formally establish this regional program goal as your own goal through your own public process (WAC 246-290-830(4)).

When completing your WUE report, describe the progress made towards achieving the regional goal. You should also document the specific measures you are implementing for your water system that help achieve the regional goal.

[7] Private systems not organized under an elected governing board must set WUE goals in a manner that allows customers the same opportunities to provide input, such as during an annual meeting.

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7.5 Goal Setting for Customers and Your Water System

You have the flexibility to determine a goal that makes sense for your customers and set as many goals you want. You may consider setting two types of goals: One that reflects supply-side efficiencies and one that reflects demand-side efficiencies. Your demand-side goal might focus on trying to get each customer to use less water during peak summer demand. **At a minimum, you must establish one goal through a public process, designed to help your customers use water efficiently.**

An ongoing supply-side management strategy to remain under the leakage standard is a good goal to have. For example, you may want to set a supply-side efficiency goal to reduce distribution system leakage to less than 10 percent by a certain date. If you are over the leakage standard, we encourage you to set goals both for reducing leakage within your water system, and for reducing water use by your customers.

Remember, setting a supply-side goal to reduce leaks is optional. You will need to implement supply-side measures, such as replacing service meters, performing a leak detection survey, and accounting for unmetered authorized uses, to comply with the leakage standard. These measures are required.

Changing Your WUE Measures to Achieve the Goal

Choosing the right WUE measures is critical to helping you achieve your goals. WUE measures should be directly related to your goals, otherwise they will not be effective in achieving your goals. If you are not achieving your goals, consider implementing different WUE measures.

Setting an Attainable Goal

Every water system will have different reasons for setting a goal for their water system. We encourage you to adopt the most water use efficient goal possible. Every goal is specific to each water system and may involve different motivating factors such as water supply characteristics, infrastructure upgrade needs, social pressures, reducing irrigation demands, or the need to obtain additional connections to meet future supply.

How water conscious are you?

Did you know that a study conducted in 2002 by the East Bay Municipal Water District in Oakland, CA found that:

- Even with service meters, 60 percent of single-family households **thought they used less than 50 gallons per day/per house!** The study found that they were actually using 228-450 gallons per day/per house.

The U.S. Environmental Protection Agency's WaterSense Program predicts that:

- Each person uses an average of 100 gallons of water every day.
- The average person **unknowingly wastes up to 30 gallons of water every day.**
- Indoors you can save about 30 gallons of water per person per day by upgrading your house with water efficient fixtures and appliances.

The first step in exploring what type of goal to set for your water system begins with stating a clear objective. It is important to relate the goals back to the unique needs and limitations of your water system. **Make it real for your customers so that the goals address the needs of the water system and the measures support your goals.** Starting with a clear objective will lead to development of an attainable goal.

Imagine the Savings!

One of the most difficult things to do when establishing a goal is to accurately predict the water savings. If you only adopt non-hardware measures (such as education and outreach) to achieve your goal, you will have a difficult time quantifying the savings. Consider adopting at least one hardware measure (such as offering free faucet aerators) to give you a better idea about how much water might be saved by installing these low-flow fixtures.

Some water systems establish a conservative goal with a 1 to 3% savings per year for a 10-year period, or within the plan approval period if it's less than 10 years. If you're having a difficult time quantifying the savings, you may want to go with a conservative goal like that for now and see how you do. Remember, if you don't achieve your goal, you just need to adjust your WUE program, which may mean implementing different measures or establishing a new goal entirely.

Example of a 1% reduction target goal: "Reduce per capita consumption, currently 95 gallons per person per day, by 1% annually, so that by 2027 we have reduced consumption to 85.5 gallons per person per day."

Assuming you were to establish a 1% savings annually over a 10-year period, you might achieve a 10% reduction in per capita use/connection over today's consumption levels (let's assume that's 95 gallons per person per day). At the end of that 10-year period, you'll need to re-establish a new goal.

Now imagine this, if you were to establish the same 1% reduction goal over the next 10 years, it would then turn into a 20% reduction over today's consumption. A 1% WUE goal might not sound like much, but over 20 years, that might reduce per capita consumption from 95 gallons per person per day to 76 gallons per person per day, and that's making progress!

Here are a few driving factors that may lead you to a specific goal:

1. **Meet regulatory requirements.** You may choose to implement or evaluate required minimum number of measures, choosing low cost measures, within reasonable budget.
2. **Demonstrate stewardship.** You may choose to implement more measures than the minimum required, within a reasonable budget level or—implement the minimum number of measures, but at a higher implementation intensity.
3. **Decrease operating costs.** You may choose to implement any conservation that is more cost-effective than the variable cost of supplying water.
4. **Defer or avoid capital costs.** You may choose to implement the amount of conservation necessary to obtain the savings necessary to defer or avoid capital costs.
5. **Obtain additional water supply (traditional supply available).** You may choose to implement any conservation that is more cost-effective than the cost of developing new traditional supply.
6. **Obtain additional water supply (traditional supply not available).** You may choose to implement all measures necessary (chosen in order of cost-effectiveness) to obtain the amount of supply needed.

Quantify the Predicted Water Savings for Each Measure

Before you establish your goal, **make sure that you have taken the time to predict the water savings you will achieve from each implemented measure.** This critical step is often overlooked and may lead you to choosing a less aggressive customer goal or a goal that is not attainable. It is much easier to predict the water saved from replacing a 3-gallon per flush toilet with a 1.3 gallon per flush toilet than predicting how the water saving ideas in your quarterly newsletter will affect customer behavioral water use patterns. Predicting the amount of water each measure will save supports your goal assumptions.

Are You Only Using Education to Achieve the Goal?

Educating your customers is a good way to get them involved in your water saving efforts. Remember, you must educate your customers at least once per year. The actual amount of water savings achieved from educational programs is very difficult to measure. You may find that the ability to achieve your goal is hindered if you rely entirely on educational tools. Without frequent reminders, some customers might slip back into their old habits of wasting water.

Long-term goals for saving water should focus on true water savings devices (such as low-flow showerheads), appliances (such as washing machines), and policies (such as ordinances). If your WUE program implements these measures, make it a point to use your educational tools (such as bill stuffers) to notify your customers about these long-term water saving options.

Stressed Water Supplies are a Great Reason to Focus Your Goals on WUE Efforts

When competition for water increases and factors, such as drought, place a strain on water supplies, it's time to revisit your WUE program and goals. During times like these, elected board members and customers are likely to support a more aggressive approach to saving water.

When you adopted your WUE goals, did you look at your existing WUE/conservation program and decide to keep doing what you've always done. If so, ask yourself this:

- Did we establish a meaningful WUE goal or was our response more of an exercise to meet the state's goal setting requirements and deadlines?
- Is there more we could do to save water? And why would we want to?
- What could we do to encourage customers to do more?

Take this opportunity to evaluate your existing WUE program and consider setting short-term goals that could help your system get through a drought or shortage. And how about setting a more aggressive water-saving goal for the long-term? Remember, you can establish as many WUE goals as you want to.

Achieving goals that are more aggressive will take more than sending annual conservation tips to your customers. Consider implementing efficiency measures that really save water, such as setting up a rebate program to help customers replace old, inefficient showerheads and toilets with WaterSense-labeled ones. The WaterSense logo identifies products that meet EPA water efficiency criteria.

Setting a Goal That Meets Our Requirements

Goals must be measurable and have a timeframe. You must establish a measurable goal that maintains or reduces water use (WAC 246-290-830(6)(b)). For example, express your goals in terms of water produced from the source, customer usage, or other measurable basis.

See Appendix I for 15 examples of goals that meet the regulatory requirements.

Setting a timeframe for achieving each particular goal is important. You may want to achieve your goal in 10 years to coincide with your water system plan update. Or perhaps 3 years, to allow enough time to see if a particular WUE measure is successful in achieving the goal.

Setting a Goal to Maintain Historic Use

After reviewing the information, if you determine no further reduction is reasonably achievable, you may propose a goal that maintains water consumption levels. Before assuming that you cannot achieve further reductions in water use, ask yourself these questions:

1. Have we looked at all the possible conservation measures?
2. Are there cost-effective measures I may not know about?
3. Have I surveyed my customers to find out which measures they might consider trying?
4. Does my budget support additional measures?

We recommend against maintaining a historic consumption level. Instead, think about how you might be able to narrow your focus in different areas. Consider establishing a goal for:

- A particular customer class (such as industrial/commercial).
  For example: "Reduce consumption by 10% for our industrial and commercial customers by the year 2020."
- Seasonal consumption. Consider a goal that may reduce seasonal outdoor water use.
  For example: “Reduce the amount of water pumped from our source well by 5% in July and August each year through 2020.”
- Your customers that use the most water.
  For example: "Reduce average monthly seasonal consumption by 15% for our top 10% highest water users by 2022."

If you end up establishing a goal to maintain a historic level (such as maintaining daily consumption at 65 gallons per person per day), you must explain why you are unable to reduce water use below that level (WAC 246-290-830(3)). **Justification must be included in your annual WUE report** and planning document (WAC 246-290-830(3)).

Documenting Goals

Keep records that show you met all the WUE requirements when you established your goals. We may ask to see this information. Records should include such things as:

- Meeting notice details, such as place and time of meeting, where and when notice was posted, and how the public was able to access the materials supporting your proposed goals.
- Public comments received about your proposed goals and how they were considered prior to formally establishing the goals.

Saving Water and Energy in Small Water Systems

The Montana Water Center has developed a training course to help small water systems operate efficiently with respect to water and power. This program consists of four 45-minute presentations meant for use in a classroom type setting. **Use it to educate your elected governing board when establishing WUE goals/programs and options for saving water and energy for your water system**.

Four main topics are covered: Energy management, Water Conservation, Alternative Energy in Water Treatment, and Water Accounting (Audits and Leak Detection). Each presentation covers:

- Why a water system should care about this topic.
- What steps to take and how to measure success.
- Case history experiences of small water systems.
- Pertinent laws and regulations.

Download it from the Montana Water Center website or order the CD (preferred for ease of use) from the National Environmental Services Center at 1-800-624-8301 and ask for product #DWCDTR29.

7.6 Setting Goals Through a Public Forum

How Do I

Establish Goals If I Don't Have Customer Meters?

You probably already have a source meter, if not, you must install one immediately. Since goals must have a water savings target and timeframe/benchmark for achieving that target, then your source meter is your only option to establish a WUE goal if you don't have customer meters.

For example, your goal could be, "Reduce the amount of water pumped from our source well by 2 percent each year through 2027 during the months of July and August."

How Often Do I Need to Evaluate and Re-establish Goals?

Goals must be evaluated and re-established when either of the following occur:

- Every 6 years if you are required to develop a small water system management program.

- As part of any water system plan or water system plan update submitted to the Department of Health for approval.

You may want to consider evaluating and re-establishing goals as part of your 10-year planning update, if you are required to do so. Evaluation and re-establishment of goals must follow the same public process and the same goal criteria used to establish the original goals.

Changes to goals are allowed at any time (WAC 246-290-830(8)). If you want to change your established goals, you must:

- Modify the goal by following the same public process and goal setting criteria used to establish previous goals.
- Identify the change to the goal in your next annual WUE report and planning document (WAC 246-290-830(8)).
- Make necessary changes to your WUE program to achieve the modified goal (WAC 246-290-830(9)).

Setting the Stage for a Public Forum

You must engage your customers and interested members of the public in a public forum (meeting) when establishing your WUE goals (WAC 246-290-830(4)(a)). This meeting has many benefits. It ensures your customers and the public can provide input on the decisions made by the governing body. It also helps the public understand the need to use water more efficiently and teaches them how they can help you achieve your goals.

Identifying Your Target Audience

You should look at three distinct groups of attendees:

- Your water system's customers.
- Local community members.
- Special interest groups such as the environmental community, local tribes, and watershed planning units.

Public Notice Requirements

The communication method you choose will be based on the audience you are trying to reach. You must provide notice at least 2 weeks in advance of the meeting (WAC 246-290-830(4)(b)).

Posting your public notice on the Office of Drinking Water's website is one acceptable way of getting the message out. If your customers would not consider visiting the Office of Drinking Water's website to learn about the meeting scheduled to adopt your goals, then use other methods of notification.

The notice must include the following information:

- Purpose of the meeting.
- Date of the meeting.
- Time when the meeting begins.
- Location for the meeting (include map if needed).

- Where your audience can find additional information supporting your proposed goal.

If public notice requirements in WAC 246-290-830(4)(b) are met, you may use an existing public meeting already scheduled, such as a city council meeting. Otherwise, you will need to arrange a special goal setting meeting.

Ways to Provide Public Notice

You can provide public notice in several different ways. A combination of the following examples may be needed to make sure your target audience is aware of the public forum:

- Develop a bill stuffer to include in customers' billing statement.
- Send direct mailing to customers and interested parties.
- Contact your customers and interested parties by phone or email.
- Put up neighborhood posters.
- Include the public notice in your newsletter.
- Put posters in windows of local businesses.
- Run a public notice as an advertisement in your local newspaper or community shoppers' guide.
- Publish in bulletins put out by churches or civic organizations.
- Publish on your website.
- Distribute a news release to local print media, radio, and TV stations.
- Publish on the Office of Drinking Water's Web at www.doh.wa.gov/ehp/dw/programs/wue.htm

Handling Meeting Logistics

Select a meeting room large enough to accommodate the number of expected attendees. You should designate one person to handle all logistical arrangements:

- Find out if there is a cost for using the room.
- Visit the room ahead of time to make sure the room will work for you.
- Make sure the room is accessible to people with disabilities.
- Reserve the meeting room or building.
- Identify and supply any needed equipment, such as recording equipment.
- Determine how you want the meeting room set up.
- Establish who lets you in, if the building is locked after hours.
- Identify who will take meeting minutes.
- Provide a sign-in sheet for attendees.
- Have an agenda and handouts available.
- Consider using a facilitator to run the meeting.

If your regularly scheduled meetings are closed to the public, dedicate the first half hour of the meeting to the public for goal setting, then ask those non-members to leave so that you can conduct your private meeting afterwards.

Tips for Conducting Effective Public Forums

Start and end the meeting on time, based on an agenda created prior to the meeting. Be clear about the purpose of the meeting and expected outcomes. In addition to preparing **what** you want to say, spend time practicing **how** the content will be delivered. Choose someone in your organization with good communication skills, who is comfortable speaking in public.

At the beginning of the meeting, introduce water system personnel in attendance. Stop frequently to provide attendees the opportunity to ask questions. Answer their questions as completely as possible in a clear, concise way. Always end the meeting thanking everyone for coming and provide contact information for follow-up comments or questions.

Remember, successful public forums require preparation, practice, and good communication skills.

Key Message to Use When Setting Goals

When the public, your customers, or the elected boards ask, "Why are we here?" think of some key messages that they might relate to, such as:

1. Using water efficiently will save you and your customers money!
2. You value the water supply (both quantity and quality).
3. You are doing your part to ensure water is available for future generations.
4. Point out the importance of relating the goals back to the unique needs and limitations of your water system.
5. Make it real for your customers so that the goals address the needs of the water system and the measures support your goals.

Chapter 8: Annual WUE Report

8.1 Overview of the Annual WUE Reporting Requirement

One of the best ways to communicate your water use efficiency (WUE) efforts is through your annual WUE report. Your report must include information about how much water was pumped from your source(s), how much water was consumed by you customers (authorized consumption), and what progress has been made toward achieving your water savings goals for the year.

Submit your WUE Report by July 1

By July 1 every year, WUE reports must be submitted to your customers and the Department of Health, and also made available to the public.

Electronically Submitting to the Department of Health

When reporting to us, you **must** submit your WUE information through our online reporting database. **We will not accept mail, email, or faxed reports.**

Follow these steps to submit your report:

1. Go to http://www.doh.wa.gov/CommunityandEnvironment/DrinkingWater/WaterSystemDesignandPlanning/WaterUseEfficiency
2. On the right hand side of the page click on "Submit Your Annual WUE Report Now."
3. Click on the link "Submit WUE Report Now."
4. Enter your water system ID number.
5. Complete the form.
6. Review the information for accuracy before you submit.
7. Hit the submit button. YOU'RE DONE!

After you successfully submit your annual report, you will receive a confirmation email. Then your report, along with every other WUE Report, will be available to the public online.

Please don't include any other materials (such as the WUE section from your water system plan, pictures, graphs, tables, charts, or examples of educational brochures) in your annual WUE report. Instead, include this type of information on your website or in the annual report to your customers (consumer confidence report).

Submit to Customers

Send the WUE report by email or regular mail to your customers by July 1 every year. Consider providing detailed information in the report to your customers about your WUE program rather than in the summarized version you submit to us. Sending your customers the same report you submit to the department may confuse them. Instead, summarize the WUE information in your Consumer Confidence Report or newsletter.

Make Available to the Public

You are also required to make your annual WUE report available to the public (WAC 246-290-840(1)(a)). Some ways you can do this include:

- Posting it on your website.
- Distributing it to local libraries.
- Letting your local media know it is available.

At minimum, you must provide your annual WUE report to the general public upon request.

Share the Info, Share the Wealth

You can view any submitted WUE Report by clicking on "Search for Completed WUE Reports" from the main WUE website. Take this opportunity to see what neighboring water systems are doing to use water efficiently. See how your WUE goals compare to others in the state. You may even find some water-saving ideas for your own water system. Then, consider forming partnerships with your neighbors to save money and develop a more effective community outreach program.

8.2 Preparing Your Annual WUE Report

This section contains general information to help you fill out the online annual WUE report. We intend to maintain a reporting system that is as streamlined and easy to use as possible. We will make every effort to ensure that you can successfully submit your WUE information by updating the reporting system as necessary. Look for a reporting worksheet on our WUE reporting website at https://fortress.wa.gov/doh/eh/portal/odw/wue/default.aspx or in the Guidebook's Appendix E.

Review this List Before You Submit Your WUE Report

There are a number of things you'll want to know before you submit your report to us each year. Below is list of general guidelines about what to expect:

General Information

- Be brief and concise when reporting to us. The online form limits the space you have.
- Avoid using graphs, tables, special characters, symbols, bold or underline text, and special fonts. The database may see this as a security risk and delete it from your report. Instead, include this information on your web site or annual report to customers.
- Please fill out all fields in the WUE report. Some fields are required and won't allow you to proceed if you leave them blank.
- Submit your report even if you don't have all of the information. By submitting your WUE report to us, you can show what progress you have made and meet the annual reporting requirement. Use the extra space provided at the end of the WUE report to explain any data fields you may have left empty.
- You'll need to know the first five numbers of your water system identification number to get into the reporting system.
- After thirty (30) minutes of inactivity, the system is designed to close automatically. If this occurs, any information entered will be lost. You will be warned before it closes and have an opportunity to keep working on the report.
- Use the WUE reporting worksheet to gather information before you submit the report.
- You will have an opportunity to review the report for accuracy. Once you submit the report, you will not be able to re-open it for editing.

Meter Information

- If your system isn't fully metered, tell us approximately what percentage of the system is metered and when you intend to be fully metered.

Reporting Year Information

- Select a reporting year from the drop down box. The reporting year is just like a tax year.
- You may submit information from previous years.
- 12-Month WUE Reporting Period: Enter the beginning and ending months that establish your annual data information. For example, if you have determined that May 1 to April 30 is your annual data for the 2009 reporting year, enter 05/01/2008 to 4/30/09.
- If you don't have a full years worth of data (for example, maybe your software data collection system crashed), then explain that in the space provided.

Production, Consumption, and DSL Information

- Enter your total metered water use (total production), in gallons, from all sources for the year. This has nothing to do with your water rights. See Chapter 6 for a complete explanation as to what you need to report for total production.
- Enter your total metered water use (authorized consumption), in gallons, from all of your customers for the year. This has nothing to do with your water rights. See Chapter 6 for a complete explanation as to what you need to report for authorized consumption.
- After you have entered total production and authorized consumption, the database will automatically calculate DSL volume and percentage for the year.
- Three-year average DSL percentage will automatically calculate once you have submitted 3 years worth of data. The oldest year will be dropped from the average.

Goal Setting Information

- Indicate the date that you held your public forum to establish goals.
- Identify the WUE goal that was established by the elected governing board. Make sure you identify a water savings target and timeframe for achieving the goal.
- Report all progress you have made in achieving water efficiency for your water system and your customers.
- Identify any WUE measures you are currently implementing (such as customer education, conservation rate structures, or offering low-flow showerheads).
- If you established a goal to maintain a historic level (such as maintaining daily consumption at 65 gallons per person per day for the next two years) you must explain why you are unable to reduce water use below that level.
- If you are exceeding the DSL standard, briefly explain what you are doing to control water loss by summarizing your water loss control action plan.

Appendices

Appendix A:	Integrating Water Use Efficiency Requirements Into Your Planning Documents
Appendix B:	Water Use Efficiency Measures
Appendix C:	Water Supply Characteristics and Examples
Appendix D:	Distribution System Leakage Template, Instructions, and Calculation Example
Appendix E:	Water Use Efficiency Annual Reporting Worksheet
Appendix F:	Recommended Publications and Websites
Appendix G:	Water Volume Conversions
Appendix H:	Goal Setting Flowchart
Appendix I:	Examples of Customer Goals
Appendix J:	Water Conservation Tips
Appendix K:	*Stop Water Waste*
Appendix L:	*Water Tap Special Report: Water Shortage* and *Tips to Reduce Outdoor Water Use This Summer*
Appendix M:	U.S. Environmental Protection Agency's WaterSense Program
Appendix N:	Local Stories of Successful Water Use Efficiency Programs
Appendix O:	*Setting Goals to Use Water Efficiently*
Appendix P:	*Reduce Leaks*
Appendix Q:	*Water Conservation Leadership Guide: Issues for an Elected Governing Board to Consider* and *Sprayed Away: Seven Ways to Reduce Texas' Outdoor Water Use*
Appendix R:	Example of a Large Municipal WUE Program
Appendix S:	Example of a Small Municipal WUE Program
Appendix T:	Examples of a Water Loss Control Action Plan
Appendix U:	Water Use Efficiency Requirements for Nonmunicipal Water Suppliers

Appendix B: Water Use Efficiency Measures

Examples of measures that meet water use efficiency requirements

Indoor Residential

- Toilet or urinal retrofit
- Rebate program
- Showerhead or faucet replacement
- Indoor water audit
- School outreach
- Displays at fairs and events
- Speakers bureau
- Targeted marketing
- Advertising (media)
- Conservation rates
- Customer leak detection education (indoor leak repair)
- Water bill showing consumption history

Outdoor

- Workshops for landscape professionals
- Soil moisture sensors
- Rain sensors
- Irrigation timers
- Xeriscaping (low-water use landscaping)
- Demonstration garden
- Turf replacement rebate
- Landscape ordinances
- Drip irrigation
- Landscape water audit
- Irrigating with reclaimed water

Industrial/Commercial/ Institutional

- Recycling or reuse
- Commercial pre-wash sprayers
- Showerhead or faucet replacement
- Cooling tower improvements
- Toilet or urinal retrofit
- Cooling systems retrofit
- Air-cooled refrigeration
- Water use audits (including irrigation systems)
- Water bill showing consumption history
- Using reclaimed water

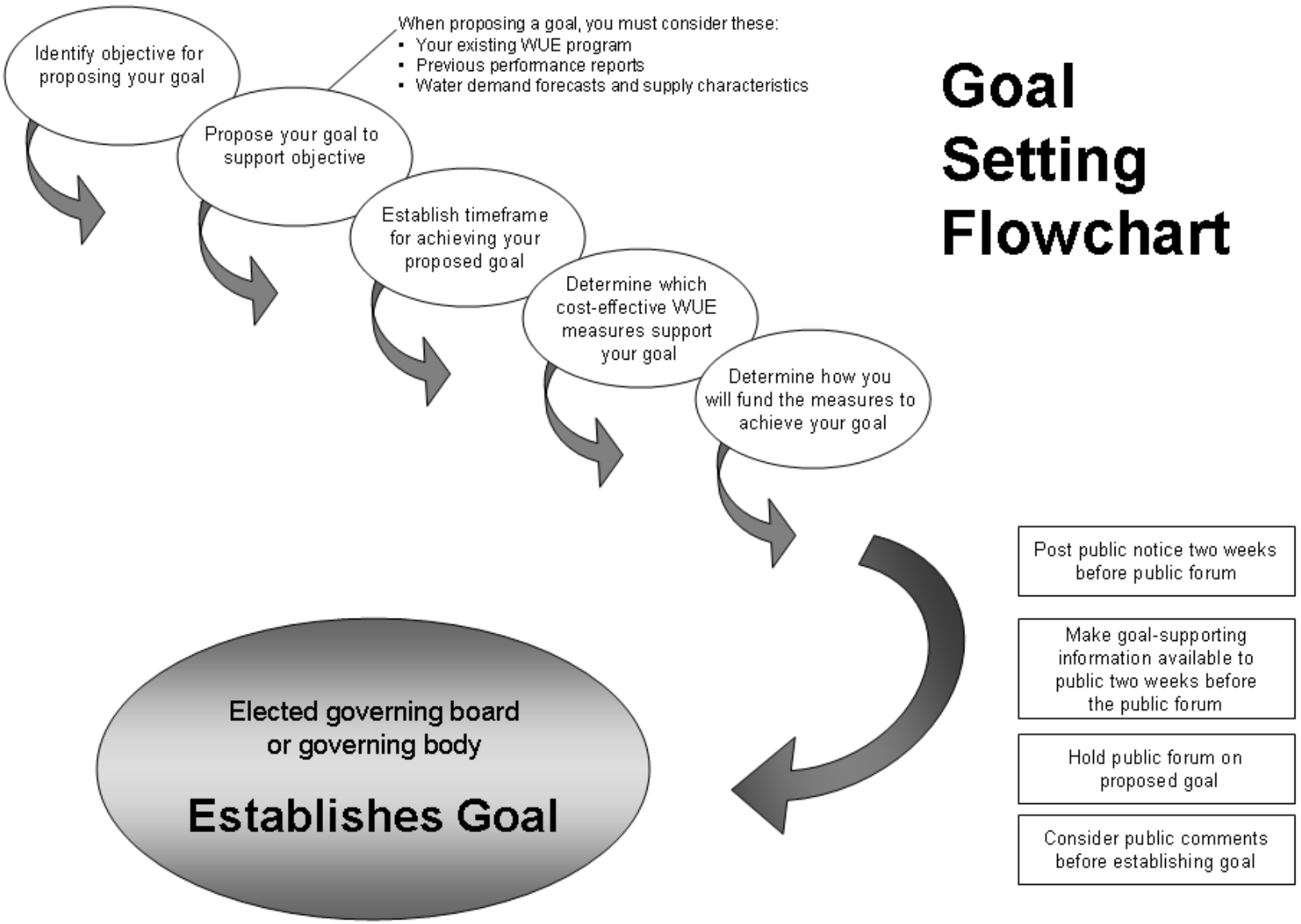
These measures can be used in more than one category

- School outreach
- Displays at fairs and events
- Speakers bureau
- Targeted marketing
- Advertising
- Conservation rates
- Water bill showing consumption history
- Water use ordinances
- High efficiency shower heads
- High efficiency faucet aerators
- Toilet or urinal retrofit
- Xeriscaping (low water use landscaping)
- Using reclaimed water
- Rebate programs (such as toilets or washing machines)

Appendix H: Goal Setting Flowchart

The goal setting flowchart on the next page shows the steps needed to establish your goal, including the public forum process. Chapter 7 and Appendix O have detailed information about goal setting. Here are some important things to remember about goal setting:

- If you have 1,000 or more connections, you have until July 1, 2009, to establish your goals.
- If you have less than 1,000 connections, you have until July 1, 2010, to establish your goals.
- A minimum of one goal is required.
- The goal must be designed to enhance the efficient use of water by your customers.
- If you established a goal to maintain a historic level (such as maintaining daily consumption at 65 gallons per person per day), you must explain why you are unable to reduce water use below that level (WAC 246-290-830(3)).
- Goals must be **evaluated and re-established when either of the following occur**:
  - Every 6 years if you are required to develop a small water system management program.
  - As part of any water system plan or water system plan update submitted to the Department of Health for approval.
- The elected governing board or governing body at your water system must establish your goals.


Goal Setting Flowchart
Identify objective for proposing your goal
When proposing a goal, you must consider these:
▪ Your existing WUE program
▪ Previous performance reports
▪ Water demand forecasts and supply characteristics
Propose your goal to support objective
Establish timeframe for achieving your proposed goal
Determine which cost-effective WUE measures support your goal
Determine how you will fund the measures to achieve your goal
Post public notice two weeks before public forum
Make goal-supporting information available to public two weeks before the public forum
Hold public forum on proposed goal
Consider public comments before establishing goal
Elected governing board or governing body
Establishes Goal

Appendix I: Examples of Customer Goals

Goal 1: Reduce average day demand per connection from 310 gallons to 260 gallons in 5 years.

Goal 2: Reduce daily use per person from 100 gallons to 70 gallons in 10 years.

Goal 3: Reduce water production per person, on an average annual basis, from 250 gallons per day to 230 gallons per day within 6 years.

Goal 4: Save 100,000 gallons per day, on an average annual basis, at full implementation of the conservation program in 6 years.

Goal 5: Reduce average 3rd-tier residential water consumption per customer by 15 percent by 2013.

Goal 6: Reduce seasonal outdoor water use by 2 to 3 percent by December 31, 2010.

Goal 7: Save 5 gallons per family home per day by 2014.

Goal 8: Reduce single-family residential water consumption by 25 gallons per day (gpd) per home by 2014.

Goal 9: Reduce per connection use by 7 percent by 2010.

Goal 10: By 2015, reduce consumption per equivalent residential unit (ERU) from 495 to 415 gpd/ERU.

Goal 11: Reduce consumption by 20 percent for the highest 10 percent water users in our single-family class customers by 2012.

Goal 12: Reduce seasonal summer demand by 25 gallons per day for residential customers within the next 6 years.

Goal 13: Reduce total production from our wells by 5 percent within 6 years.

Goal 14: Maintain daily per capita consumption at 65 gallons per person per day for the next 2 years (justification required for maintaining consumption levels (see WAC 246-290-830(3) and Section 7.5).

Goal 15: Reduce regional consumption by 1 percent at the end of 3 years (based on a regional program goal).

June 2008
DOH 331-402

Setting Goals to Use Water Efficiently

Why set goals to use water efficiently?

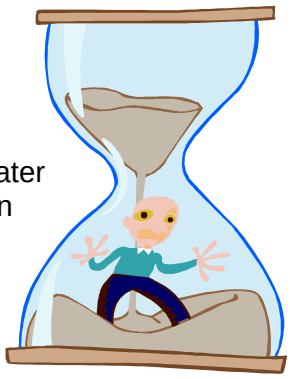
Water system owners, managers, and operators work hard to provide safe and reliable drinking water to their customers. Using water efficiently helps you manage the growing demand for water. One of the most important steps in using water efficiently is setting water efficiency goals. Goals help you track your progress and determine the success of your water use efficiency (WUE) program.

We've heard some water systems ask questions like:

- "Why should we spend the time and money to use water more efficiently?"
- "Why do we need to worry about saving water, there's water all around us?" Usually they are referring to large water bodies such as the Columbia, Snake and Yakima rivers, Lake Washington, and Puget Sound.
- "We've never run out of water before, so why set a goal to use water efficiently?"

In answering these questions, we remind systems how important it is to look at the "big picture" of water efficiency. Consider the value of water not just as a source of revenue, but also for its aesthetic, recreational and environmental benefits, and the benefits to the health of the watershed in which you live. Our water supplies are not endless; demands on the state's water are increasing daily. Understanding that water is a finite resource that we simply cannot do without helps explain why we need to set goals for using water efficiently.

Don't wait until it's too late



The water use efficiency rule is a proactive approach to protecting public health, preserving our state's water resources, and ensuring the efficient use of water. Water systems are in a better position to provide sufficient water to their customers when they take action to reduce the amount of water taken from the resource. Water efficiency becomes even more important in the event of a drought, as climate changes become more evident, as the state's population grows, and as fewer water rights become available to water suppliers.

As you think about setting your goals, consider the water supply in your community and what challenges you may face in the future. Show your community your commitment to protecting the resource. Demonstrate good stewardship by establishing goals that use water in the most efficient way possible.

Where to start

When getting ready to propose a goal, think about how your community can use water more efficiently without sacrificing cultural values. For example, if your community likes to garden, focus on how customers can change their gardening practices to use water more wisely. Consult your local nursery or county cooperative extension program to find materials and ideas you can use to educate your customers. Those water saving ideas can turn into a measurable water savings goal for the community. Here are some things to consider:

- Determine what types of cost-effective measures (such as water saving devices and education) will support the goal.
- Keep your customers informed of new water saving technology, such as soil moisture sensors or water efficient washing machines.
- Show how saving water can reduce other utility bills such as energy, gas, or wastewater.
- Identify a funding source for the measures you use to achieve the goal.
- Establish a timeline for achieving the goal.

Setting your goals

By law, you must establish at least one goal to help your customers use water efficiently. You must use a public process to do so.

Exploring what type of goals to set for your water system begins with stating a clear objective. We encourage you to adopt the most effective and water efficient goals possible. Every goal is specific to each water system. Your objective may involve different motivating factors such as water supply characteristics, infrastructure upgrade needs, social pressures, reducing outdoor water use, or the need to obtain additional connections to meet future demand.

You must evaluate and re-establish your goals every six years ***and*** any time you submit a water system planning document to the Department of Health for approval.

You have the flexibility to determine goals that makes sense for your customers and set as many goals you want.

How efficient can you be?

You might be asking yourself, “How good is good enough? Have I set a goal that the Department of Health will accept? Should I maintain the historic water use patterns of my community?” These are all questions you will need to consider. In many cases, you can find ways to reduce water use; it just takes some creativity to find those water savings.

If you end up establishing a goal to maintain a historic level (such as maintaining consumption at 65 gallons per person per day), you will need to explain to us why you are unable to reduce water use below that level.

The following are examples of acceptable goals:

- Reduce total production from wells by five percent within six years.
- Maintain daily consumption at 65 gallons per person per day for the next two years.

Before establishing your goal in a public meeting, please review the *Getting Started: Water Use Efficiency Guidebook*, DOH 331-375, for more information.

Don't limit your choices

Many times, water systems only look at their average day demand or average use per person per day when setting goals. Consider establishing a goal that targets specific water users within your customer base. Reducing water use within the commercial or industrial class might be a good option for your goal if those customers use a large percentage of your system's water.

For example, you might establish a goal to "Reduce industrial customer water use from 40 to 30 percent of total water system production by the year 2014." You can achieve this by conducting water audits of your industrial customers, providing rebates, evaluating rates, and identifying how reducing water consumption can save them money.

What is the difference between setting goals and meeting the leakage standard?

In addition to setting a goal to reduce consumption by your customers, which you are required to do by law, we also encourage you to set a goal to reduce leakage within your water system. You are required to meet a leakage standard aimed at reducing leaks within your distribution system to no more than 10 percent, but this cannot be your only goal.

We realize that fixing your leaks may be your first priority and is one of the most cost-effective ways to use water efficiently. It's also a great way to show your customers how you are protecting this important resource and might even encourage behavioral changes in how they use water.

Use education to achieve your goal while installing meters and reducing leaks

We understand that you will need to spend money on reducing leaks and installing meters. For many systems, installing meters and fixing leaks will be a priority and we support those efforts to meet the deadlines.

You can achieve your customer goal without spending a lot of money. Many water systems will rely entirely on education and outreach to achieve their goal. EPA's WaterSense program is a great tool to help you meet your goal (see sidebar).

Educating your customers about using water efficiently is a requirement of the water use efficiency rule. It's also one of the easiest things you can do to encourage changes in how your community uses water. As long as you educate your customers once per year, you have met the education requirement.

If you want to educate your customers more than once per year, (which we recommend) you can count it as a measure in your WUE program. The more often you can remind your customers about using water efficiently, the more likely they are to change water use patterns and understand why it's important.

WaterSense can help!

WaterSense is a voluntary public-private partnership program sponsored by the U.S. Environmental Protection Agency (EPA). Its mission is to promote the value of water and help you and your customers make smart decisions about water use and water-using products.

For more information, visit their website http://www.epa.gov/WaterSense/ or contact the WaterSense Helpline by email at watersense@epa.gov or call 866-WTR-SENS (987-7367)

One good point to make: It takes energy to heat water. Using water efficient devices and appliances (such as low-flow shower heads and water efficient washing machines) will save your customers money on their gas and electricity bills and provide a great incentive to lower their water use.

Consider these educational opportunities to reduce water use:

- Add water efficiency tips to your annual Consumer Confidence Report.
- Monthly newspaper advertisements.
- Quarterly newsletter, which could include seasonal water use efficiency ideas.
- Bill stuffers.

Focal points for education and outreach

Many water systems have created demonstration gardens that show how certain landscapes can save a lot of water. Consider starting a demonstration garden or pilot project within your own community to prove how implementing water saving measures will save water. A project like this would count as part of an education and outreach strategy to help achieve your goal.

Achieve the goal using demand-side (customer) measures

There is a difference between demand-side measures and supply-side measures. When you are setting goals for your customers, you must choose demand-side measures.

Demand-side measures reflect actions that affect how much water customers use, and include things such as education programs, rebates for high-efficiency toilets, rate structures based on the amount of water use, water bills that show consumption history, or a program that notifies customers they may have a leak on their property.

Choosing the right WUE measure(s) is critical to helping you achieve your goals. Choose measures that directly relate to your goals. If you are not achieving your goals, try implementing different measures.

Pilot project idea:
Select a homeowner that is willing to try out specific water savings measures within their home and compare that to historical water use patterns. Write up their story in your community newsletter to share with others. This will give you a good idea about how well the measure is working. It also gets your customers thinking about how to reduce their water use.

Achieve the leakage standard using supply-side measures

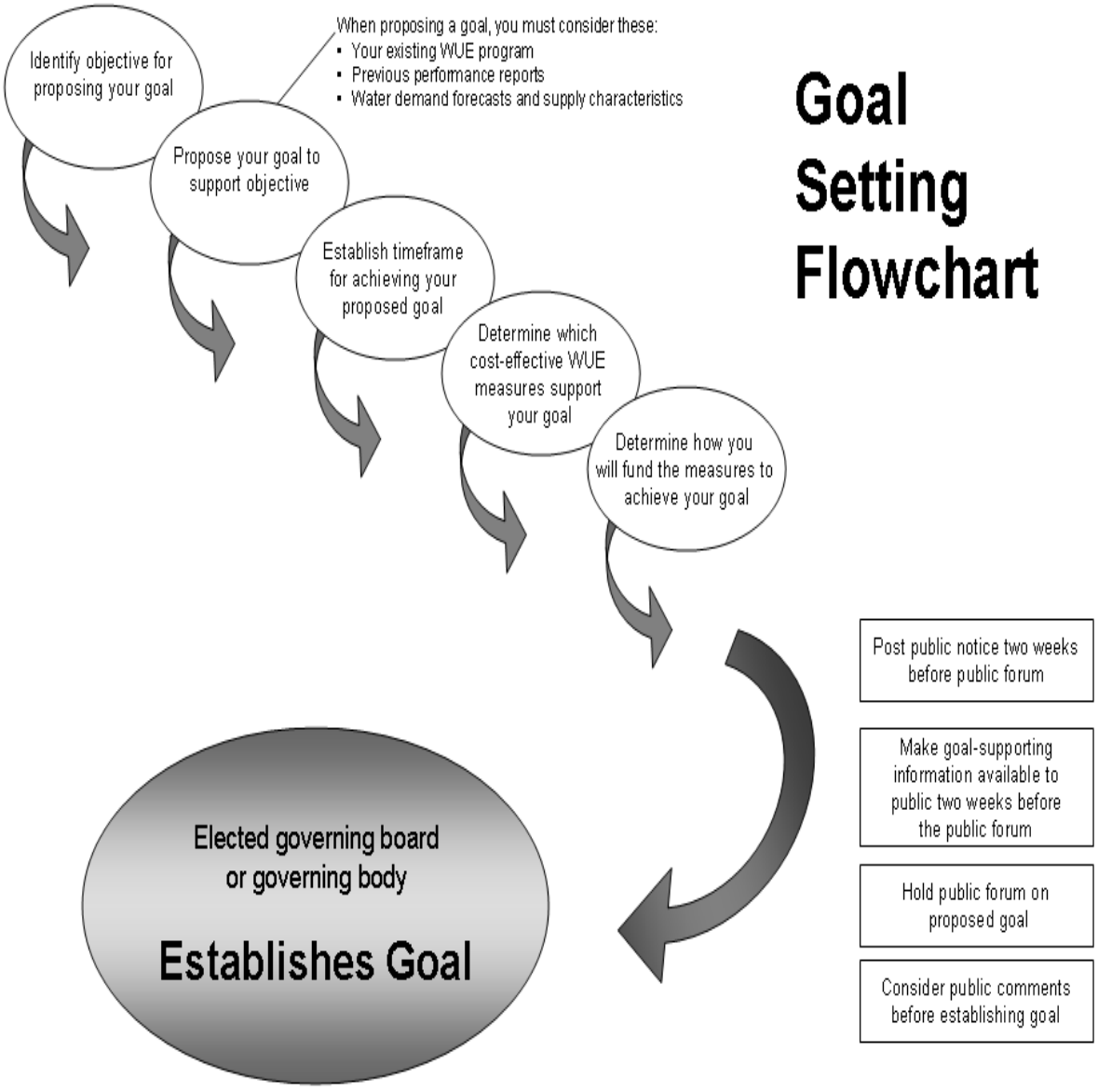
Supply-side measures show how efficiently the water system is operating, and generally include actions that will reduce leakage. They include things like meter replacement programs, source meter calibration, leak detection surveys, and water distribution system audits. You cannot use these types of measures to achieve a customer efficiency goal. These measures will not support a customer goal since they do not have a direct effect on whether customers use water more efficiently. Be careful not to select these with the assumption they will help meet the customer efficiency goal.

Setting goals in a public forum

You must engage your customers and interested members of the public when establishing your WUE goals. This meeting (forum) has many benefits. It gives your customers and the public a chance to affect decisions made by the governing body. It also helps consumers understand the need to use water more efficiently and teaches them how they can help you achieve your goals.

You should be prepared for any of the following three distinct groups to show up at your public meeting:

- Your water system's customers.
- Local community members.
- Special interest groups such as neighboring water systems, environmental organizations, tribal communities, and watershed planning units.



Public notice requirements

You must provide notice at least two weeks in advance of the meeting. The notice must include the following information:

- Purpose of the meeting.
- Date, time, and location for the meeting.
- Where your audience can find additional information supporting your proposed goal.

Use ODW's Website to provide public notice

Our water use efficiency website now has a feature that allows you to announce your goal-setting meeting and meets the public notice requirements. You can start the process by using this link on our website: How to post your goal-setting public forum to our website

Who can help

Seek out vendors and local conservation groups to find water efficiency products and services. The WaterSense website is a great resource to find products, services, manufacturers, retailers, distributors, and water efficient landscape professionals. Also available to help are the following organizations:

The Partnership for Water Conservation
http://www.partners4water.org/
206-957-2199

Evergreen Rural Water of Washington
http://www.erwow.org/
800-272-5981

Don't forget to ask your neighboring water systems about their water use efficiency programs when looking for ideas. Often they have the same questions you do, and together you may be able to form a local partnership for using water efficiently.

For more information

This and other publications are available at
http://www.doh.wa.gov/CommunityandEnvironment/DrinkingWater.aspx

Mike Dexel, Water Resources Policy Lead, 360-236-3154

Northwest Region – Kent 253-395-6750

Southwest Region – Tumwater 360-236-3030

Eastern Region – Spokane Valley 509-329-2100

It's Worth Saving Drinking Water

Appendix D

City of Sumner's Water Loss Control Action Plan, Updated April 2017

City of Sumner
Water Loss Control Action Plan:

Updated April 2017

This Water Loss Control Action Plan is intended to fulfill the City of Sumner's responsibilities with regards to the requirements of WAC 246-290-820.

This plan includes the following sections:

- Section 1. Control methods necessary to achieve compliance with the distribution system leakage standard of less than 10% Distribution System Leakage over a three year average,
- Section 2. An implementation schedule for the control methods to be implemented,
- Section 3. A budget that demonstrates how the control methods will be funded,
- Section 4. Technical and economic concerns which may affect the City's ability to implement a program or comply with the standard including past efforts and investments to minimize leakage, and
- Section 5. Address the data accuracy and data collection methods used to determine distribution system leakage.

Section 1. Control Methods Necessary to Achieve 10% or Less Distribution System Leakage.

This plan describes the steps to be undertaken by the City of Sumner's water utility to achieve the goal of maintaining a 3 year annual average percentage of Distribution System Leakage below 10%.

The 3 year annual average percent of distribution system leakage over the period of 2014 to 2016 is estimated to be 14%.

To reach the City's goal, the average annual distribution system leakage would need to be reduced by approximately 22.3 million gallons per year.

The following have been identified as actions that would reduce or better estimate the percentage of distribution system leakage.

1. Elimination of un-authorized connections to the water distribution system within industrial properties.
2. Reduction of un-authorized water withdraw from fire hydrants.
3. Upgrade the water telemetry system to increase reliability in data collection and recording.
4. Replacement of the County Springs master meter.
5. Repair of system leaks.

Section 2. Implementation Schedule for the Control Methods Identified.

The control methods identified in Section 1 to reduce Distribution System Leakage are anticipated to occur within the following timelines:

1. Elimination of un-authorized connections to the water distribution system within commercial/industrial properties. Design of water line relocations and/or the installation of authorized connections at two identified properties is anticipated to occur in 2017.
2. Reduction of un-authorized water withdraw from fire hydrants. The program to identify unauthorized water removal from the hydrants will be developed in conjunction with East Pierce Fire and Rescue for implementation in the 3rd Quarter of 2017.
3. Upgrade the water telemetry system to provide increased reliability in data collection and recording. Sumner's City Council authorization work to proceed with the Water Telemetry Modifications Project in March of 2017.
4. Replacement of the County Springs master meter. The County Springs master meter is scheduled to be replaced in 2018.
5. Repair of system leaks. The City has a demonstrated history of repairing leaks utilizing primarily the capabilities of the City operations staff. This approach has allowed the majority of the leaks found to be repaired in a timely manner.

   The leaks at Main St. beneath BNSF rail line and the leak beneath SR167 at 75th are beyond the capabilities of City operations staff to undertake. Both projects are likely to require the procurement of construction services through the design, bid, build process. No timetable for the completion of these projects has been established.

Section 3. A Budget Finding Of The Control Methods Identified.

The control methods identified in Section 1 to reduce Distribution System Leakage are addressed within the present City budget in the following manner:

1. Elimination of un-authorized connections to the water distribution system within industrial properties. The City's '17-'18 budget has funded a capital project address unauthorized connections at commercial/industrial properties. (401.54.594.340.63.00(4))
2. Reduction of un-authorized water withdraws from fire hydrants. The initial effort to determine the extent of un-authorized water withdraws from fire hydrants will be implemented as a component of the system's current operations and maintenance activities and funded through current budgeted appropriations.
3. Upgrade the water telemetry system to provide increased reliability in data collection and recording. The City's '17-'18 budget allocates funds for the telemetry upgrades throughout the water system.
4. Replacement of the County Springs master meter. The County Springs master ultrasonic meter replacement will be funded within the City's existing repair and maintenance budget.

5. Repair of system leaks. The City budget allocates monies for the replacement of water mains within the biennium budget. This allocation allows the City to repair water leaks as they are discovered.

   Undertaking projects to repair the leaks on Main St. beneath the BNSF railroad tracks or the leak beneath SR167 at 75th St. will require a re-appropriation of City utility funds to meet anticipated costs.

Section 4. Technical and Economic Concerns Affecting the City's Ability to Implement a Program or Comply with the Water Use Efficiency Standards.

Potential technical and economic concerns relevant to particular aspects of the Water Loss Control Action Plan are listed below.

Concerns Regarding Addressing Unauthorized Connections

Properties with the potential for un-authorized water connections represent legacy installations for which the City has had difficulty in ascertaining the exact extent, configuration, and authorizations of the existing connections to these properties.

Concerns Regarding the Known Leaks beneath BNSF rail line and SR167.

Existing leaks that are beyond the capabilities of the operational staff to address are critical transmission mains beneath significant transportation corridors. These distribution lines are not likely to be able to be isolated due to concerns about the potential impacts to the distribution network.

Given the potential cost to address each of these leaks, it will likely be necessary to incorporate them into capital planning efforts currently underway in the water system plan.

Concerns Regarding Addressing Unauthorized Water Withdraw from Fire Hydrants

Should it be deemed necessary to physically secure access to fire hydrants in order to prevent unauthorized withdraw, it may be difficult to devise a solution that is acceptable to the Fire Marshal.

Section 5. Data Accuracy and Data Collection Used to Determine Distribution System Leakage

The following improvements are planned to increase the accuracy of the data collected to determine the Distribution System Leakage:

- The County Springs ultrasonic master meter is being upgraded to allow for field calibration of the flow reading.
- Telemetry modifications are being installed in 2017 to increase the data collection reliability.

Appendix E

City Tech Memo on SFR Consumption

CITY OF SUMNER WASHINGTON

1104 Maple Street, Sumner WA 98390

PUBLIC WORKS DEPARTMENT
Suite 260
253-299-5700 Fax: 253-299-5539

File Memorandum

To: File

From: Jason Van Gilder, P.E., Associate Engineer, Sumner Public Works Department

Date: February 2, 2018

Re: Single Family Residential Usage Rates

This memorandum is intended to document the Single Family Residential (SFR) consumption rates typical for the City of Sumner.

Single Family Residential for this purpose is intended to include only residential services to single family dwellings served by ¾" meters.

Background

Historically, the average annual daily consumption rate has been calculated by dividing the total consumption billed to single family residential accounts by the number of accounts.

That calculation yielded the following values:

Year	SFR ADD Average (gpd)
2013	179.0
2014	182.6
2015	189.7
2016	176.0
2017	195.5

Combined Average	**184.6**

Approach

Engineering currently has available meter read data for the period December 2013 to 12/30/17, allowing for a more comprehensive review than was previously possible.

The following basic manipulation of the data set was taken for each year:

1. Accounts for which no consumption was recorded on the account were excluded from the analysis. These most likely represent vacant properties.
2. Accounts were excluded for which there were less than 5 meter readings during the year, the first reading of the year was after February 1st, and the last reading of the year was prior to December 1st. This represented properties that may not have had water service throughout the entire course of the year.
3. The largest water users from the remaining data set appeared to have water use patterns indicative of non-single family residential usage. Accounts otherwise meeting the above criteria within the 2017 data set had usage rates that would represent 28.9 σ and 14.9 σ above the mean value. It was considered statistically impossible that this usage pattern could have been accounted for within a normal distribution. To exclude water users likely to be using water in a non-typical manner for a single family residence, the top 0.5% of annual consumption accounts were excluded as likely to be non-single family water users.

Findings:

Year	SFR ADD Average (gpd)	SFR ADD Median (gpd)	SFR ADD Standard Deviation (gpd)
2014	181.6	161.9	104.6
2015	195.5	174.2	113.5
2016	181.1	157.8	105.7
2017	199.3	178.3	113.8
'14 to '17	**189.6**	**168.1**	**109.2**

Appendix F

CT Time Calculations

City of Sumner 2019 Water System Plan Update
Appendix E - CT Time Calculations

Central Well CT at Current Source Capacity and Instantaneous Water Right:

Pipe Dia =	48 inches
Length =	700 linear feet
Flowrate =	1050 gpm
Area =	12.57 sf

Source Capacity (gpm)	Total Flow (CF/Min)	Pipe Volume (CF)	Flowrate (CF/min)	Baffling Factor (T10/T)	Detention Time (min)	Total Detention Time T10 (min)	FREE Residual Chlorine (mg/L)	CT (mg/L) (min)
1050	140.4	8796.5	140.37	1	62.7	62.7	0.45	28.2

Sumner Springs CT at Maximum Source Capacity:
(Using 10% Baffling Factor in Reservoir)

Tank Dia =	81 feet
Tank Depth =	26 feet
Flowrate =	951 gpm
Volume =	133,978 CF

Pipe Dia =	14 inches
Length =	800 linear feet
Flowrate =	951 gpm
Area =	1.07 sf

Source Capacity (gpm)	Total Flow (CF/Min)	Tank Volume (CF)	Flowrate (CF/min)	Baffling Factor (T10/T)	Detention Time (min)	Pipe Volume (CF)	Flowrate (CF/min)	Baffling Factor (T10/T)	Detention Time (min)	Total Detention Time T10 (min)	FREE Residual Chlorine (mg/L)	CT (mg/L) (min)
951	127.1	133977.9	127.1	0.1	105.4	855.2	127.1	1	6.7	112.1	0.45	50.4

Elhi Springs CT at First Customer, Maximum Source Capacity:

CONTACT TANK #1

Tank Dia =	36 inches
Tank Depth =	5.5 feet
Flowrate =	92 gpm
Volume =	39 CF

CONTACT TANK #2

Tank Dia =	32 inches
Tank Depth =	4.8 linear feet
Flowrate =	92 gpm
Volume =	27 sf

Pipe Dia =	2 inches
Length =	12 linear feet
Flowrate =	92 gpm
Area =	0.02 sf

Pipe Dia =	4 inches
Length =	6 linear feet
Flowrate =	92 gpm
Area =	0.09 sf

Pipe Dia =	6 inches
Length =	29 linear feet
Flowrate =	92 gpm
Area =	0.20 sf

Pipe Dia =	0.75 inches
Length =	450 linear feet
Flowrate =	5 gpm
Area =	0.003 sf

Source Capacity (gpm)	Total Flow (CF/Min)	Tank Volume (CF)	Flowrate (CF/min)	Baffling Factor (T10/T)	Detention Time (min)	Pipe Volume (CF)	Flowrate (CF/min)	Baffling Factor (T10/T)	Detention Time (min)	Pipe Volume (CF)	Flowrate (CF/min)	Baffling Factor (T10/T)	Detention Time (min)	Pipe Volume (CF)	Flowrate (CF/min)	Baffling Factor (T10/T)	Detention Time (min)	Pipe Volume (CF)	Flowrate (CF/min)	Baffling Factor (T10/T)	Detention Time (min)	Pipe Volume (CF)	Flowrate (CF/min)	Baffling Factor (T10/T)	Detention Time (min)	Total Detention Time T10 (min)	FREE Residual Chlorine (mg/L)	CT (mg/L) (min)
92	12.3	38.9	12.3	0.3	0.9	26.8	12.3	0.3	0.7	0.3	12.3	1	0.02	0.5	12.3	1	0.04	5.7	12.3	1	0.5	1.4	0.7	1	2.1	4.2	1.42	6.0

West Well CT at Maximum Source Capacity:

Pipe Dia =	6 inches
Length =	4982 linear feet
Flowrate =	250 gpm
Area =	0.20 sf

Source Capacity (gpm)	Total Flow (CF/Min)	Pipe Volume (CF)	Flowrate (CF/min)	Baffling Factor (T10/T)	Detention Time (min)	Total Detention Time T10 (min)	FREE Residual Chlorine (mg/L)	CT (mg/L) (min)
250	33.4	978.2	33.42	1	29.3	29.3	0.45	13.2

County Springs CT at Maximum Source Capacity:
(Using 10% Baffling Factor in Reservoir)

Tank Dia =	20 feet
Tank Depth =	28 feet
Flowrate =	493 gpm
Volume =	8,796 CF

Pipe Dia =	18 inches
Length =	700 linear feet
Flowrate =	493 gpm
Area =	1.77 sf

Pipe Dia =	8 inches
Length =	250 linear feet
Flowrate =	98.6 gpm
Area =	0.35 sf

Source Capacity (gpm)	Total Flow (CF/Min)	Tank Volume (CF)	Flowrate (CF/min)	Baffling Factor (T10/T)	Detention Time (min)	Pipe Volume (CF)	Flowrate (CF/min)	Baffling Factor (T10/T)	Detention Time (min)	Pipe Volume (CF)	Flowrate (CF/min)	Baffling Factor (T10/T)	Detention Time (min)	Total Detention Time T10 (min)	FREE Residual Chlorine (mg/L)	CT (mg/L) (min)
650	86.9	8796.5	86.9	0.1	10.1	1237.0	86.9	1	14.2	87.3	13.2	1	6.6	31.0	0.45	13.9

County Springs CT at Instantaneous Water Right:
(Using 10% Baffling Factor in Reservoir)

Tank Dia =	20 feet
Tank Depth =	28 feet
Flowrate =	799 gpm
Volume =	8,796 CF

Pipe Dia =	18 inches
Length =	700 linear feet
Flowrate =	799 gpm
Area =	1.77 sf

Pipe Dia =	8 inches
Length =	250 linear feet
Flowrate =	159.8 gpm^2
Area =	0.35 sf

Source Capacity (gpm)	Total Flow (CF/Min)	Tank Volume (CF)	Flowrate (CF/min)	Baffling Factor (T10/T)	Detention Time (min)	Pipe Volume (CF)	Flowrate (CF/min)	Baffling Factor (T10/T)	Detention Time (min)	Pipe Volume (CF)	Flowrate (CF/min)	Baffling Factor (T10/T)	Detention Time (min)	Total Detention Time T10 (min)	FREE Residual Chlorine (mg/L)	CT (mg/L) (min)
799	106.8	8796.5	106.8	0.1	8.2	1237.0	106.8	1	11.6	87.3	21.4	1	4.1	23.9	0.45	10.8

City of Sumner 2019 Water System Plan Update
Appendix E - CT Time Calculations

South Well CT at Maximum Source Capacity:

		Pipe Dia = 12 inches Length = 484 linear feet Flowrate = 700 gpm Area = 0.79 sf						
Source Capacity (gpm)	Total Flow (CF/Min)	Pipe Volume (CF)	Flowrate (CF/min)	Baffling Factor (T10/T)	Detention Time (min)	Total Detention Time T10 (min)	FREE Residual Chlorine (mg/L)	CT (mg/L) (min)
700	93.6	380.1	93.58	1	4.1	4.1	0.45	1.8

		Pipe Dia = 12 inches Length = 484 linear feet Flowrate = 700 gpm Area = 0.79 sf						
Source Capacity (gpm)	Total Flow (CF/Min)	Pipe Volume (CF)	Flowrate (CF/min)	Baffling Factor (T10/T)	Detention Time (min)	Total Detention Time T10 (min)	FREE Residual Chlorine (mg/L)	CT (mg/L) (min)
700	93.6	380.1	93.58	1	4.1	4.1	1.47	6.0

Approximately 1.47 mg/L free residual chlorine needed to maintain CT=6.0

Dieringer Well CT at First Customer, Maximum Source Capacity:

NORTH TANK

		Pipe Dia = 4 inches Length = 20 linear feet Flowrate = 250 gpm Area = 0.09 sf				Pipe Dia = 8 inches Length = 3015 linear feet Flowrate = 250 gpm Area = 0.35 sf				Tank Dia = 120 feet Tank Depth = 24.23 feet Flowrate = 800 gpm^2 Volume = 274,035 CF				Pipe Dia = 16 inches Length = 640 linear feet Flowrate = 800 gpm^2 Area = 1.40 sf				Pipe Dia = 8 inches Length = 1900 linear feet Flowrate = 500 gpm^2 Area = 0.35 sf						
Source Capacity (gpm)	Total Flow (CF/Min)	Pipe Volume (CF)	Flowrate (CF/min)	Baffling Factor (T10/T)	Detention Time (min)	Pipe Volume (CF)	Flowrate (CF/min)	Baffling Factor (T10/T)	Detention Time (min)	Tank Volume (CF)	Flowrate (CF/min)	Baffling Factor (T10/T)	Detention Time (min)	Pipe Volume (CF)	Flowrate (CF/min)	Baffling Factor (T10/T)	Detention Time (min)	Pipe Volume (CF)	Flowrate (CF/min)	Baffling Factor (T10/T)	Detention Time (min)	Total Detention Time T10 (min)	FREE Residual Chlorine (mg/L)	CT (mg/L) (min)
250	33.4	1.75	33.4	1	0.05	1052.4	33.4	1	31.5	274034.8	107.0	0.1	256.2	893.6	107.0	1	8.4	663.2	66.8	1	9.9	306.0	0.3	91.8

Dieringer Well CT at First Customer, Instantaneous Water Right:

NORTH TANK

		Pipe Dia = 4 inches Length = 20 linear feet Flowrate = 95 gpm Area = 0.09 sf				Pipe Dia = 8 inches Length = 3015 linear feet Flowrate = 95 gpm Area = 0.35 sf				Tank Dia = 120 feet Tank Depth = 24.23 feet Flowrate = 800 gpm^2 Volume = 274,035 CF				Pipe Dia = 16 inches Length = 640 linear feet Flowrate = 800 gpm^2 Area = 1.40 sf				Pipe Dia = 8 inches Length = 1900 linear feet Flowrate = 500 gpm^2 Area = 0.35 sf						
Source Capacity (gpm)	Total Flow (CF/Min)	Pipe Volume (CF)	Flowrate (CF/min)	Baffling Factor (T10/T)	Detention Time (min)	Pipe Volume (CF)	Flowrate (CF/min)	Baffling Factor (T10/T)	Detention Time (min)	Tank Volume (CF)	Flowrate (CF/min)	Baffling Factor (T10/T)	Detention Time (min)	Pipe Volume (CF)	Flowrate (CF/min)	Baffling Factor (T10/T)	Detention Time (min)	Pipe Volume (CF)	Flowrate (CF/min)	Baffling Factor (T10/T)	Detention Time (min)	Total Detention Time T10 (min)	FREE Residual Chlorine (mg/L)	CT (mg/L) (min)
95	12.7	1.75	12.7	1	0.14	1052.4	12.7	1	82.9	274034.8	107.0	0.1	256.2	893.6	107.0	1	8.4	663.2	66.8	1	9.9	357.5	0.3	107.3

Appendix G

Sumner Water Rights

For Ecology Use
(Date Stamp)

DEPARTMENT OF ECOLOGY
State of Washington

State of Washington
Application for a Water Right Permit

☐ **SURFACE WATER** ☒ **GROUND WATER**
☒ **Permanent** ☐ **Temporary** ☐ **Short Term**

Follow the attached instructions. Attach additional sheets as necessary.

A NON-REFUNDABLE **MINIMUM** FEE OF $50.00 PAYABLE TO THE DEPARTMENT OF ECOLOGY MUST ACCOMPANY THIS APPLICATION.

DEC 23 A8:48 DEPT OF ECOLOGY CASHIERS BUDGET

Section 1. APPLICANT

Applicant/Business Name: City of Sumner	Phone No: (253) 863-8300	Other No: (253) 299 -5509 Fax
Address: 1104 Maple Street		
City: Sumner	State: WA	Zip: 98390-1423
Email Address (optional):		

Contact Name (if different from above): William Pugh	Phone No: (253) 299- 5701	Other No:
Relationship to Applicant: Public Works Director		
Address: same as above		
City:	State:	Zip:
Email Address (optional): billp@ci.sumner.wa.us		

NOTE ADDITIONAL CONTACT PERSON: Thomas M. Pors, Law Office of Thomas M. Pors, 1700 Seventh Avenue, Suite 2100, Seattle WA 98101
(206) 357-8570; (866) 342-9646 FAX
tompors@comcast.net

Section 2. STATEMENT OF INTENT

Briefly describe the purpose of your proposed project: Municipal Water Supply to meet future growth demands

Anticipated length of time to complete your project: 2058

Water Use List all purposes for which water will be applied to a beneficial use and list quantity required for each.

Purpose(s) of Use	Rate (check one box only) ☐Cubic Feet per Second (CFS) ☒Gallons per Minute (GPM)	Acre-Feet per Year (AF/YR) (If known)	Period of Use (Continuously or Seasonal)
Municipal	2250	1580	Continuously
TOTAL:	2250	1580	

Short Term/Temporary Water Use

Is this a request for a short term project (less than four months and non-recurring)? ☐ YES ☒ NO

For Ecology Use	APPLICATION NO: G2-30534 SEPA: Exempt/Not Exempt Fee Paid: ✓ Check No: ECY Coding: 001-001-WR1-0285-000011
Date Returned By	Priority Date 10/23/09 By SC WRIA: 10

Corrected copy

Is this request for a temporary permit? ☐YES ☒ NO

If yes to either question above, indicate the dates that the water will be needed:

FROM: ____/____/____ TO: ____/____/____

Section 3. POINT OF DIVERSION OR WITHDRAWAL

Complete A or B, and C below

A.) If Surface Water Source	B.) If Ground Water Source
☐ Spring ☐ Creek ☐ River ☐ Lake ☐ Other:_____ Source Name:_____ Tributary to:_____ Number of proposed diversion points:_____ Do you have an existing diversion? ☐ YES ☐ NO	☒ Well(s) ☐ Other:_____ _____ Well diameter & depth: large diameter municipal wells, finished in the regional Deep Valley Aquifer Number of proposed points of withdrawal:3 Do you have an existing well? ☒ YES ☐ NO If available, attach Water Well Report and pump test. Well Tag ID No. Multiple – see Water System Plan

C.) Point of Diversion/Withdrawal – Legal Description

Parcel No.	¼	¼	Section	Township	Range	County
	ALL	NE & NW	24	20N	4E	Pierce
	ALL	SE & SW	13	20N	4E	Pierce
	ALL	NE & NW	13	20N	4E	Pierce
	NW	NW	7	20N	4E	Pierce

Lot(s)	Block(s)	Subdivision

If known, enter the distances in feet from the point of diversion or withdrawal to the nearest section corner:

_____ Feet (☐ North/☐ South) and _____feet (☐ East/☐ West)

from the (☐NW ☐SW ☐NE ☐SE ☐ ____) corner of Section_____.

Parcel No.	¼	¼	Section	Township	Range	County

Lot(s)	Block(s)	Subdivision

If known, enter the distances in feet from the point of diversion or withdrawal to the nearest section corner:

_____feet (☐ North/☐ South) and _____feet (☐ East/☐ West)

from the (☐NW ☐SW ☐NE ☐SE ☐____) corner of Section_____

NOTE: If more than two points of diversion/withdrawal attach additional information on a separate sheet of paper.

Do you own the land on which the proposed point of diversion/withdrawal is located? ☐ YES ☒ NO
If no, do you have legal authority to make this application for use of another's land? ☐ YES ☒ NO
Provide the owner name(s), address, and phone number: Well sites are under review and owner permission will be obtained prior to drilling test wells.

Section 4. PLACE OF USE

Attach a copy of the legal description of the property (on which the water will be used) taken from a real estate contract, property deed or title insurance policy, or copy it carefully in the space below.

Area served by City of Sumner, as described in its Water System Plan.

For Ecology Use	APPLICATION NO:_____ SEPA: Exempt/Not Exempt Fee Paid:_____ Check No:_____ ECY Coding: 001-001-WR1-0285-000011
Date Returned _____ By_____ Priority Date _____ By_____ WRIA:_____	

Is this request for a temporary permit? ☐YES ☒ NO

If yes to either question above, indicate the dates that the water will be needed:

FROM: ____/____/____ TO: ____/____/____

Section 3. POINT OF DIVERSION OR WITHDRAWAL

Complete A or B, and C below

A.) If Surface Water Source	B.) If Ground Water Source
☐ Spring ☐ Creek ☐ River ☐ Lake ☐ Other:_____	☒ Well(s) ☐ Other:_____
Source Name:_____	Well diameter & depth: large diameter municipal wells, finished in the regional Deep Valley Aquifer__
Tributary to:_____	Number of proposed points of withdrawal:3
Number of proposed diversion points:_____	Do you have an existing well? ☒ YES ☐ NO
Do you have an existing diversion? ☐ YES ☐ NO	If available, attach Water Well Report and pump test.
	Well Tag ID No. Multiple - see Water System Plan

C.) Point of Diversion/Withdrawal – Legal Description

Parcel No.	¼	¼	Section	Township	Range	County
	ALL	NE & NW	24	24N	4E	Pierce
	ALL	SE & SW	13	24N	4E	Pierce
	ALL	NE & NW	13	24N	4E	Pierce
	NW	NW	7	24N	4E	Pierce

Lot(s)	Block(s)	Subdivision	

If known, enter the distances in feet from the point of diversion or withdrawal to the nearest section corner:

_____ Feet (☐ North/☐ South) and _____feet (☐ East/☐ West)

from the (☐NW ☐SW ☐NE ☐SE ☐ ____) corner of Section_____.

Parcel No.	¼	¼	Section	Township	Range	County

Lot(s)	Block(s)	Subdivision	

If known, enter the distances in feet from the point of diversion or withdrawal to the nearest section corner:

_____feet (☐ North/☐ South) and _____feet (☐ East/☐ West)

from the (☐NW ☐SW ☐NE ☐SE ☐____) corner of Section_____

NOTE: If more than two points of diversion/withdrawal attach additional information on a separate sheet of paper.

Do you own the land on which the proposed point of diversion/withdrawal is located? ☐ YES ☒ NO
If no, do you have legal authority to make this application for use of another's land? ☐ YES ☒ NO
Provide the owner name(s), address, and phone number: Well sites are under review and owner permission will be obtained prior to drilling test wells.

Section 4. PLACE OF USE

Attach a copy of the legal description of the property (on which the water will be used) taken from a real estate contract, property deed or title insurance policy, or copy it carefully in the space below.

Area served by City of Sumner, as described in its Water System Plan

For Ecology Use	APPLICATION NO:_____ SEPA: Exempt/Not Exempt
	Fee Paid:_____ Check No:_____ ECY Coding: 001-001-WR1-0285-000011
Date Returned _____ By_____	Priority Date _____ By_____ WRIA:_____

¼	¼	Section	Twp.	Range	County	Parcel No.

Do you own all the lands on which the proposed place of use is located? ☐ YES ☒ NO.

If no, do you have legal authority to make this application for use of another's land? ☒ YES ☐ NO
Provide owner name(s), address, and phone number: The City of Sumner is the designated water service provider for the Sumner water service area.

Are there any other water rights or claims associated with this property or water system? ☒ YES ☐ NO

If yes, provide the water right and/or claim numbers: See City of Sumner Comprehensive Water System Plan, Table 5-3, attached.

Attach a map of your project showing the point of diversion/withdrawal and place of use. If platted property, be sure to include a complete copy of the plat map.

Section 5. WATER SYSTEM DESCRIPTION

Describe your proposed water system (include type and size of devices used to divert or withdraw water from source): New high capacity, deep aquifer municipal wells to connect to existing City of Sumner water supply system; mitigation for impacts to White River instream flows to be purchased from and supplied by Cascade Water Alliance pursuant to water right S2-29934.

Section 6. DOMESTIC WATER SUPPLY SYSTEM INFORMATION

Complete A or B, and C below

A.) Domestic Water Systems only	**B.) Municipal Water Systems only** *(defined under RCW 90.03.015)*
Projected number of connections to be served: _____ Type of connections: _____ *(e.g., home, recreational cabin)*	Present population to be served water: 9,881 Estimate future population to be served: 21,340 (~~20~~ 50 year projection) See attached study by Parametrix.

C.) Water System Planning

Do you have a Water System Plan approved by the Washington State Department of Health, Drinking Water Division? ☐ YES ☒ NO Plan to be submitted to Dept. of Health in November 2009

If yes, date plan was approved ____/____/____ Water System Number: 851207

Name of water system: City of Sumner Water System

Are you within the service area of an existing water system? ☐ YES ☒ NO

If yes, explain why you are unable to connect to the system: _____

Section 7. IRRIGATION/STOCKWATER/OTHER FARM USES

Irrigation

Total number of acres requested to be irrigated under this application = _____ ACRES
NOTE: Outline the area to be irrigated on your attached map.

Stockwater

List number and kind of stock:_____

_____

_____

Is the proposed project for a dairy farm? ☐ YES ☐ NO

Other Proposed Farm Uses
Describe all proposed uses: _____

Family Farm Water Act (RCW 90.66):

Calculate the acreage in which you have a controlling interest, including only:

- Acreage irrigated under water rights acquired after December 8, 1977,
- Acreage proposed to be irrigated under this application, and
- Acreage proposed to be irrigated under other pending application(s).

Is the combined acreage under existing rights greater than 6000 acres? ☐ YES ☐ NO

Do you have a controlling interest in a Family Farm Development Permit? ☐ YES ☐ NO

If yes, enter Permit No: _____

Section 8. OTHER WATER USES

Hydropower

Indicate total feet of head _____ and proposed capacity in kilowatts:_____

Describe works:_____

_____

_____

Indicate all uses to which power is to be applied:_____

FERC License No: _____

Mining/Industrial Use
Describe use, method of supplying and utilizing water:_____

_____

_____

Other Use

_____

_____

_____

_____

Section 9. WATER STORAGE

Will you be using a dam, dike, or other structure to retain or store water? ☐ YES ☒ NO

Are you proposing to store more than 10 acre-feet of water? ☐ YES ☒ NO

Will the water depth be 10 feet or more? ☐ YES ☒ NO

If you answered yes to any of the above questions, please describe:_____

_____

_____

NOTE: If you will be storing 10 acre-feet or more of water and/or if the water depth will be 10 feet or more at the deepest point and some portion of the storage will be above grade, you must also complete an Application for Permit to Construct a Reservoir and a Dam Construction Permit and Application.

Section 10. DRIVING DIRECTIONS

Provide detailed driving directions to the project site:

I-5 N toward Tacoma/Seattle, 15.1 mi; exit 127 onto WA-512 E toward Puyallup, 11.9 mi; exit onto WA-167 N toward Yakima/Seattle, 1.1 mi; exit onto WA-410 E toward Sumner/Yakima, 0.4 mi; Traffic Ave/E Main exit, 0.2 mi; turn left at Main Ave/Traffic St (signs for Sumner/Traffic Ave); continue to follow Traffic St 0.4 mi; turn right at Maple St. to 1104 Maple Street. City staff will accompany Ecology officials to well sites.

Site Address: 1104 Maple Street, Sumner, WA 98390-1423

Section 11. REQUIRED SIGNATURES

I certify that the information provided in this application is true and accurate to the best of my knowledge. I understand that in order to process my application, I grant staff from the Department of Ecology access to the site for inspection and monitoring purposes. Even though the employees of the Department of Ecology may have assisted me in the preparation of the above application, all responsibility for the accuracy of the information rests with me, the applicant.

Print Name	Signature	Date
William L. Pugh (Applicant or authorized representative)	William L. Pugh	10/20/09
(Landowner of Place of Use)		
(Landowner of Place of Use)		
(Landowner of Place of Use)		

Submit your application to: DEPARTMENT OF ECOLOGY
CASHIERING SECTION
PO BOX 47611
OLYMPIA, WA 98504-7611

Please check the region in which your proposed project is located.
☒ Southwest ☐ Northwest ☐ Central ☐ Eastern

Below is a map of the State of Washington, with outlines of the four Ecology regional offices. If you have questions about your application, contact the Water Resources program at the regional office in which your project is located.

Southwest Regional Office: 360-407-6300

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
PO Box 47775 • Olympia, Washington 98504-7775 • (360) 407-6300
711 for Washington Relay Service • Persons with a speech disability can call 877-833-6341

June 23, 2017

City of Sumner
Attn: Jason Van Gilder
1104 Maple St., Suite 260
Sumner, WA 98390

Re: Application's for Change of Water Right Permit CG2-21980 and CG2-23281 for Temporary Water Use

Dear Mr. Van Gilder:

On June 1, 2004 the City of Sumner filed *Applications for Change of Water Right Permit* CG2-21980 and CG2-23281 to add the Central Well as an additional point of withdrawal. These proposed changes would have allowed the City to fully exercise these water rights from the Central Well. The Central Well located in the SW NE of Section 24, T. 20 N., R. 4 E.W.M.

Instead of pursuing the approval of the full quantity associated with G2-21980 and G2-23281, the City has decided to request a temporary approval to use the Central Well on a limited basis in accordance with peak and non-peak quantities at a much reduced amount. This temporary approval would remain in place until the USGS finalizes their Puyallup basin groundwater flow model and potential impacts of the full transfer of quantities associated with G2-21980 and G2-23281 can be evaluated or until a permit is issued under pending application G2-30534.

The intent of this temporary permit is to provide operational flexibility without increasing the City's allocated water rights. The City holds both surface water and groundwater rights and uses wells and a series of developed springs for water supply. Their water rights have been previously described in detail in their water-system plan, which was reviewed by Ecology for general concurrence with water right attributes and quantities.

Under this temporary authorization, the City's withdrawal from the Central Well will not exceed 1,050 gpm during the months of July, August, and September. The average pumping rate from October through June will decrease to 110.9 gpm, the amount necessary to maintain the City's wet sand filter medium for the water treatment facility. The City will remain within the 1,250 gpm combined Qi for the South and West Wells, and manage pumping so as not to exceed the water right authorization allotted for the three wells. The proposed pumping regime under this temporary authorization and attributes of G2-21980 and G2-23281 are summarized below in Tables 1 and 2, respectively.

Table 1: Proposed Pumping Regime under this Temporary Authorization

Well	Peak Season (gpm)	Non Peak (gpm)	Jul-Sep (cfd)	Oct-Jun (cfd)	Qa (af)
West	36.9	0	7104	0	15
South	163.1	213.9	31399	41179	324.3
Central	1050	110.9	202139	21350	560.7
Totals	1250	324.8	240642	62528	900

Table 2: Existing Groundwater Rights

Source	Water Right	GPM	Acre-feet/year
South Well	G2-23281C	1,000	800
West Well	G2-21980C	250	100
			900

Mitigation Plan

Withdrawals from the Central Well are predicted to result in decreases to the amount of groundwater discharge in the lower reaches of the White River. Since Chapter 173-510 WAC closes the White River and all its tributaries for both surface water and groundwater withdrawals that impact streamflows, the City has proposed to offset/mitigate for any depletion to the White River that will occur as a result of this temporary authorization.

The mitigation requirements are based on the revised vertical hydraulic conductivity (Kz) value for the Osceola mudflow confining unit and on the change in how the Central Well will be operated. Predicted streamflow depletion would range from 28.4 to 80.7 gpm during the irrigation season (May through September) and from 32.2 to 66.0 gpm during the non-irrigation season. This equates to an average depletion rate of 47.6 gpm, or approximately 76.8 acre-feet per year.

The City's mitigation plan will consist of the temporary trust donation of Surface Water Certificate CS2-3752 to offset impacts that would occur during the summer, which is when most of the water will be withdrawn from the Central Well. CS2-3752 has been accepted into Ecology's Trust Water Program as a temporary donation for instream flow purposes in the amount of 0.76 cubic feet per second and 90.03 acre-feet per year. It will remain dedicated to the offset of potential impacts to the White River so long as this temporary authorization is in effect. CS2-3752 is appurtenant to the Sumner Meadows Golf Course which has been closed and the property redeveloped to other water uses. The City preserves the option to convert this temporary donation to a permanent donation as part of a larger mitigation package that addresses the City's future needs.

The City currently holds rights in the amount of 2882.25 ac-ft/year. Based on the water system planning data contained in the City of Sumner's November 2009 Water System Plan, the City's Average Daily Demand (ADD) in 2024 is expected to reach 2,833.6 acre-feet per year, thus based on the WSP calculations the City holds adequate rights to meet their projected 20 year ADD demand. Production in 2015 amounted to 1,790 acre-feet.

During the non-irrigation period the City will manage its withdrawals from the springs to compensate for its use of groundwater. The effect of non-peak withdrawals from the Central Well is that 110.9 gpm more would be bypassed from Sumner or Crystal Springs to Salmon Creek from October through June.

Other Pending Applications

On October 29, 2009 the City filed application G2-30534 in the amount of 2,250 gpm and 1,580 acre-feet from up to three wells. The intent of this filing was to secure authorization to construct and use wells with which to exercise Cascade Water Alliance mitigation water (as authorized under S2-29934). The City understands that the allocation of additional water rights will require mitigation such as, but not limited to, what is provided by the Cascade Mitigation block. This temporary authorization is intended to allow for operational flexibility until such time as a new permit for additional Qa is issued.

The schedule for evaluating application G2-30534 is also dependent on the USGS's ability to finalize their Puyallup basin groundwater flow model.

Authorization

Under the provisions of Chapter 90.44.020 RCW, the Department of Ecology may issue a Temporary Permit during the pendency of a water right application provided that water is legally available and will not result in the impairment of instream resources or other water users. The City has demonstrated that their request can be mitigated such that impairment will not occur, and in a manner that does not conflict with the intent of WAC 173-510.

The well will be operated at a rate not to exceed 1,050 gpm, and that the total volume of water withdrawn from it under this temporary request will not exceed 560.7 acre-feet/year.

The City agrees that mitigation will occur so long as the Central Well is in use under this authorization. Accordingly this letter constitutes a Temporary Use Permit issued to authorize the use of the Central Well during the pendency of application G2-30534. The water will be used beneficially, and will not impact existing rights or be detrimental to the public interest.

Accordingly, this letter serves as a Temporary Permit, which is issued subject to existing rights and to the following provisions:

1. The effective date of this permit is June 8, 2017 and is effective until the USGS finalizes their Puyallup basin groundwater model where potential impacts of the full transfer can be re-evaluated or until such time as a permit is issued under pending application G2-30534. If you need to extend this temporary authorization you must request an extension in writing.

2. This permit authorizes a maximum withdrawal rate of 1,050 gallons per minute, 560 acre-feet per year.

3. Data reporting is required as follows for the Central, South and West Wells:

Measurement of Water Use

How often must water use be measured?	Monthly
How often must water use data be reported to Ecology?	Annually
What volume should be reported?	Total Annual Volume
What rate should be reported?	Annual Peak Rate of Withdrawal (gpm)

You have a right to appeal this decision. To appeal this you must:

- File your appeal with the Pollution Control Hearings Board within 30 days of the "**date of receipt**" of this document. Filing means actual receipt by the Board during regular office hours.
- Serve your appeal on the Department of Ecology within 30 days of the "**date of receipt**" of this document. Service may be accomplished by any of the procedures identified in WAC 371-08-305(10). "Date of receipt" is defined at RCW 43.21B.001 (2).

Be sure to do the following:

- Include a copy of this document that you are appealing with your *Notice of Appeal.*
- Serve and file your appeal in paper form; electronic copies are not accepted.

1. To file your appeal with the Pollution Control Hearings Board

Mail appeal to:
The Pollution Control Hearings Board
PO Box 40903
Olympia WA 98504-0903

OR

Deliver your appeal in person to:
The Pollution Control Hearings Board
1111 Israel Road SW
Tumwater WA 98501

2. To serve your appeal on the Department of Ecology

Mail appeal to:		**Deliver your appeal in person to:**
The Department of Ecology Appeals Coordinator P.O. Box 47608 Olympia WA 98504-7608	**OR**	The Department of Ecology Appeals Coordinator 300 Desmond Dr SE Lacey WA 98503

3. And send a copy of your appeal to:

Michael J. Gallagher
Department of Ecology
Southwest Regional Office
PO Box 47775
Olympia WA 98504-7775

For additional information visit the Environmental Hearings Office Website: http://www.eho.wa.gov. To find laws and agency rules visit the Washington State Legislature Website: http://www1.leg.wa.gov/CodeReviser.

If you have any questions, please contact Ecology at (360) 407-6300.

Signed at Lacey, Washington, and this 23rd day of June 2017.

Michael J. Gallagher

Michael J. Gallagher, Section Manager
SWRO Water Resources Program

MJG:th

cc: Carla Carlson, Muckleshoot Indian Tribe, Fisheries Division
Char Naylor, Puyallup Tribe of Indians, Puyallup Fisheries
Tom Pors
Jill Van Hulle, Pacific Groundwater Group

City of Sumner

1104 Maple Street
Sumner, Washington 98390

(206) 863-8300

July 27, 1992

Mr. Paul Gilligan
Parametrix, Inc
P.O. Box 460
Sumner, WA 98390

RE: City of Sumner
Water System Comprehensive Plan

Dear Mr. Gilligan,

Please find attached a report on the current status of water rights for the City of Sumner. This report is for use in preparing the update to the Water System Comprehensive Plan.

If you have any questions please contact us.

Very truly yours,

Lois Wilson

Lois Wilson, P.E.
City Engineer

LW:so

enclosure

cc: Project File

SHERWOOD ENGINEERING
1315 ACADEMY STREET
SUMNER, WA 98390

July 23, 1992

Marwan Salloum, P.E.
Director of Public Works
City of Sumner
1104 Maple St.
Sumner, WA 98390

Dear Sir:

Enclosed please find a copy of my Report on the current status of water rights for the City of Sumner. I have some additional research on-going which may make an addendum to this report necessary.

Thank you for this opportunity to be of service to the City.

Please contact me if you have any questions.

Very truly yours,

Glen W. Sherwood

Glen W. Sherwood, P.E.

Enclosure

REPORT

ON

CITY OF SUMNER WATER RIGHTS

Pursuant to your Notice to Proceed, I have conducted a search of the City records and received a tabulation from the Department of Ecology records regarding water rights currently held by the City of Sumner, and find that the City has properly filed and recorded water rights to four sources as follows:

	Name	Location
1.	Salmon Springs Cert. 7838	SW1/4, SE1/4, and the E1/2, SE1/4, SW1/4 Sec. 18, T20N, R5E, WM
2.	Salmon Springs (Sumner Springs) Cert. S2-21979C	Govt. Lot 8 and the SW1/4 of the SE1/4 Sec 18, T20N, R5E, WM
3.	South Well Cert. G2-23281C	SE1/4 of SE1/4 Sec 30,T20N, R5E, WM
4.	Cemetery Well Cert. G2-21980C	SE1/4 of SW1/4 Sec 23, T20N, R4E, WM

The City also has water rights on two spring sources which it acquired by purchase of the Weber-Ritter Co. in 1968. These are:

	Name	Location
5.	Crystal Springs Cert. 02266 (S2-04931C)	NW1/4 of NE1/4 Sec 19, T20N, R5E, WM
6.	Unnamed Springs (North of Crystal Springs) Cert. 02267 (S2-04932C)	NW1/4 of NE1/4 Sec 19, T20N, R5E, WM

These sources and the Certificate limits are tabulated in Table 1. Copies of the Water Rights Certificates are attached to this report.

The City also acquired Elhi Springs from the Weber-Ritter Co. in 1968 but the Dept. of Ecology has no record of a water rights filing on that source in the NE1/4 of the SW1/4 and the NW1/4 of the SE1/4 of Sec 29, T20N, R5E, WM. The City of Bonney Lake filed an application for water rights on

this source in 1949 but the Elhi Water Co. (Weber-Ritter) protested on the basis that the source had been used by the Elhi Water Co. and its predecessors since before 1900 for domestic supply, and water rights had been filed by Mark Maynard and recorded June 19, 1907 at 12:18 P.M. with the Pierce Co. Auditor. The application by Bonney Lake was rejected by the Dept. of Conservation and Development.

In a Valuation Report dated June 1964 Livingston & Moore, Consulting Engineers, estimated that on April 29, 1964, 153 gpm flowed into the reservoir at Elhi Springs and that 153 gpm flowed around it. They also estimated that a spring adjacent to the reservoir flowed 62 gpm.

RECOMMENDATIONS:

1. File for a change of Purpose and Place of use for the Weber-Ritter rights, Certificates 02266 (S2-04931C) and 02267 (S2-4932C), to municipal supply and to area served by the City of Sumner.

2. File for an increase in the maximum annual usage for the South Well Certificate (G2-23281C) from 2450 ac ft/yr to at least 2770 ac ft/yr, or possibly to 3030 ac ft/yr.

3. File for water rights to a portion of the flow (probably 50%) from Elhi Springs depending on a determination of the flow from the springs.

4. File for increased water rights from the Cemetery Well Certificate (G2-21980C).

Attachments

Report Prepared By:
Glen W. Sherwood
Professional Engineer
Sherwood Engineering
1315 Academy St.
Sumner, WA 98390

Dated: July 22, 1992

Table 1

CITY OF SUMNER

WATER RIGHTS TABULATION

Source With Water Rights	Water Right Certificate #	Maximum Q_I Daily(cfs)	Maximum Yearly Q_A (ac-ft/yr)	Theoretical Q_A (ac-ft/yr)
Salmon Springs	7838	5.0	1008*	3620
Salmon Springs	S2-21979C	1.25	900	900
South Well	G2-23281C	2.23	800	1615
emetery Well	G2-21980C	0.56	100	805
Crystal Springs (Weber-Ritter)	02266(S2-04931C)	0.25	180	180
Unnamed Springs (Weber-Ritter)	02267(S2-04932C)	0.20	142	142
TOTAL		9.49	3030	7262

* Limit appears in Report of Examination - not in Certificate

NOTE:

In the Certificate on the South Well G2-23281C, the DOE stated "In no instance shall the total annual quantity withdrawn/diverted under all existing and/or claimed rights exceed 2450 acre-feet for municipal supply". The Weber-Ritter sources were not noted as being a factor in the DOE statement.

STATE OF WASHINGTON, COUNTY OF Pierce

CERTIFICATE OF SURFACE WATER RIGHT

(In accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the State Supervisor of Water Resources thereunder.)

This is to certify that CITY OF SUMNER

of Sumner, State of Washington, has made proof to the satisfaction of the State Supervisor of Water Resources of Washington, of a right to the use of the waters of Salmon Springs, a tributary of Salmon Creek, with point or points of diversion within the SW¼, SE¼ AND E½, SE¼, SW¼ Sec. 18, Twp. 20 N., R. 5 E. W. M., under and subject to provisions contained in Appropriation Permit No. 11361 issued by the State Supervisor of Water Resources, and that said right to the use of said waters has been perfected in accordance with the laws of Washington, and is hereby confirmed by the State Supervisor of Water Resources of Washington and entered of record in Volume 16, at Page 7838, on the 21st day of July, 19 60, that the priority date of the right hereby confirmed is August 18, 1958; that the amount of water under the right hereby confirmed, for the following purposes is limited to an amount actually beneficially used and shall not exceed 5.0 cubic feet per second for Municipal Supply

A description of the lands under such right to which the water right is appurtenant, and the place where such water is put to beneficial use, is as follows:

City of Sumner

The right to the use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in Sections 6 and 7, Chapter 122, Laws of 1929.

WITNESS the seal and signature of the State Supervisor of Water Resources affixed this 21st day of July, 19 60.

M. Walker

State Supervisor of Water Resources.

2829026

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

CERTIFICATE OF WATER RIGHT

[X] Surface Water (Issued in accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the Department of Ecology.)

[ ] Ground Water (Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the Department of Ecology.)

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
February 22, 1974	S 2-21979	S 2-21979 P	S 2-21979 C

NAME
CITY OF SUMNER

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
1104 Maple St	Sumner	Washington	98390

This is to certify that the herein named applicant has made proof to the satisfaction of the Department of Ecology of a right to the use of the public waters of the State of Washington as herein defined, and under and specifically subject to the provisions contained in the Permit issued by the Department of Ecology, and that said right to the use of said waters has been perfected in accordance with the laws of the State of Washington, and is hereby confirmed by the Department of Ecology and entered of record as shown.

PUBLIC WATER TO BE APPROPRIATED

SOURCE
Salmon Springs

TRIBUTARY OF (IF SURFACE WATERS)
Salmon Creek

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR
1.25		900

QUANTITY, TYPE OF USE, PERIOD OF USE
900 acre-feet per year municipal supply continuously

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION—WITHDRAWAL
Along the hillside between a point 850 feet north and 200 feet west from the south quarter corner of Sec. 18; and a point 500 feet east and 500 feet north from the south quarter corner of Sec. 18

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
Government Lot 8 and SW¼SE¼	18	20	5 E	10	Pierce

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

Area served by City of Sumner within T. 20 N., R. 4 E.W.M. and T. 20 N., R. 5 E.W.M.

(SEE REVERSE SIDE)

CERTIFICATE

2543560

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

CERTIFICATE OF WATER RIGHT

☐ Surface Water (Issued in accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the Department of Ecology.)

☒ Ground Water (Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the Department of Ecology.)

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
October 11, 1974	G 2-23281	G 2-23281P	G 2-23281 C

NAME
CITY OF SUMNER

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
1104 Maple St	Sumner	Washington	98390

This is to certify that the herein named applicant has made proof to the satisfaction of the Department of Ecology of a right to the use of the public waters of the State of Washington as herein defined, and under and specifically subject to the provisions contained in the Permit issued by the Department of Ecology, and that said right to the use of said waters has been perfected in accordance with the laws of the State of Washington, and is hereby confirmed by the Department of Ecology and entered of record as shown.

PUBLIC WATER TO BE APPROPRIATED

SOURCE
well

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR
	1,000	800

QUANTITY, TYPE OF USE, PERIOD OF USE
800 acre-feet per year municipal supply continuously

LOCATION OF DIVERSION/WITHDRAWAL

XIMATE LOCATION OF DIVERSION—WITHDRAWAL
500 feet west and 480 feet north of the southeast corner of Sec. 30

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
SE¼SE¼	30	20	5 E	10	Pierce

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

Area served by City of Sumner within T. 20 N., R. 4 E.W.M. and T. 20 N., R. 5 E.W.M.

(SEE REVERSE SIDE)

CERTIFICATE

2543853

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

CERTIFICATE OF WATER RIGHT

☐ Surface Water (Issued in accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the Department of Ecology.)

☒ Ground Water (Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the Department of Ecology.)

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
February 22, 1974	G 2-21980	G 2-21980 P	G 2-21980 C

NAME
CITY OF SUMNER

ADDRESS (STREET) 1104 Maple St (CITY) Sumner (STATE) Washington (ZIP CODE) 98390

This is to certify that the herein named applicant has made proof to the satisfaction of the Department of Ecology of a right to the use of the public waters of the State of Washington as herein defined, and under and specifically subject to the provisions contained in the Permit issued by the Department of Ecology, and that said right to the use of said waters has been perfected in accordance with the laws of the State of Washington, and is hereby confirmed by the Department of Ecology and entered of record as shown.

PUBLIC WATER TO BE APPROPRIATED

SOURCE
well

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR
	250	100

QUANTITY, TYPE OF USE, PERIOD OF USE		
100 acre-feet per year	irrigation of 50 acres	May 1 to October 1

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION—WITHDRAWAL
7 .eet west and 600 feet north from the south quarter corner of Sec. 23

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, IE. OR W.) W.M.	W.R.I.A.	COUNTY
SW¼	23	20	4 E	10	Pierce

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

In Sec. 23, T. 20 N., R. 4 E.W.M.:

Tract 1 (Old Cemetery)

Commencing at stone monument on inside corner of ell of the I. Wollery D.L.C.; thence south 89°01' west 227.20 feet to the true point of beginning; thence north 0°14'20" east 69.80 feet to southerly line of C.M. and St. P. right of way; thence north 78°50' west 126 feet; thence north 79°32' west 386.84 feet; thence north 79°36'50" west 776.94 feet; thence south 10°45'30" west 292.40 feet, more or less, to the northerly line of county road; thence easterly along said line 319.80 feet, more or less, to Woodlawn Abbey; thence north 09°28' east 196.42 feet; thence south 87°14'02" east 150.10 feet; thence south 0°34'34" west 232.76 feet to northerly line of county road; thence south 75°02' east 854.66 feet; thence north 0°14'20" east 329.95 feet to true point of beginning.

Tract 2 (New Cemetery)

Commencing at stone monument at northeast corner of the I. Wollery D.L.C.; thence south 89° 47'30" west 728.40 feet; thence south 0°14'20" west 1386 feet; thence south 89°47'30" west 431.84 feet to the true point of beginning; thence south 0°14'20" west 626.50 feet; thence north 89°47'30" east 432.17 feet; thence south 71°41' east 397.70 feet to a point in the west line of Creso Road; thence south 0°14'20" west 642.65 feet to a point in the north line of the Inter-County River Improvement Easement of June 5, 1913; thence south 67°06'20" w '83.37 feet; thence south 65°08'45" west 321.40 feet; thence south 82°30' west 250 f thence south 61°46'30" west 491.47 feet; thence north 0°53'22" west 1646.81 feet; thence south 89°33'42" west 338.54 feet to a pipe monument; thence north 0°39'54" west 1174.93 feet more or less, to southerly line of county road; thence south 75°11' east 257.85 feet; thence south 0°14'20" east 672.50 feet; thence north 89°47'30" east 191 feet, more or less, to a stone monument; thence north 0°14'02" east 610.40 feet to the southerly line of county road; thence south 75°11' east 817.67 feet, more or less, to the easterly line of Roseli Road; thence south 0°14'22" west 372.50 feet to true point of beginning;
EXCEPT that portion thereof lying southwesterly of the northern line of State Highway SR-167.

(SEE REVERSE SIDE)

CERTIFICATE

STATE OF WASHINGTON, COUNTY OF Pierce

CERTIFICATE OF WATER RIGHT

(In accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the State Supervisor of Hydraulics thereunder.)

This is to certify, that WEBER & RITTER, INC. *of* Sumner, *State of* Washington, *has made proof to the satisfaction of the State Supervisor of Hydraulics of Washington, of a right to the use of the waters of* Crystal Springs, *a tributary of* Salmon Creek, *with point or points of diversion within the* NW¼ of NE¼ Sec. 19, Twp. 20 N., Range 5 E., W. M., *for the purposes of* domestic supply for community *under* Appropriation *Permit No.* 2847 *issued by the State Supervisor of Hydraulics, and that said right to the use of said waters has been perfected in accordance with the laws of Washington, and is hereby confirmed by the State Supervisor of Hydraulics of Washington and entered of record in Volume* 5, *at Page* 2266, *on the* 23rd *day of* July, 19 45; *that the right hereby confirmed dates from* August 3, 1939; *that the amount of water to which such right is entitled and hereby confirmed, for the purposes aforesaid, is limited to an amount actually beneficially used for said purposes, and shall not exceed* 0.25 of a cubic foot per second.

A description of the lands under such right to which the water hereby confirmed is appurtenant, and the place where such water is put to beneficial use, is as follows:

PLACE OF USE			LEGAL SUBDIVISION	FOR IRRIGATION	
Section	Township	Range		No. Acres Described in Permit	No. Acres Actually Irrigated

LOCATION OF POWER PLANT			LEGAL SUBDIVISION	FOR POWER	
Section	Township	Range		H. P. Described in Permit	H. P. Actually Developed

Section	Township	Range	LEGAL SUBDIVISION	FOR OTHER USES
19	20 N.	5 E.W.M.	Van Tassell Garden Tracts E½ of NW¼; E½ of SW¼	Domestic supply for community use.

The right to the use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in Sections 6 and 7, Chapter 122, Laws of 1929.

WITNESS the seal and signature of the State Supervisor of Hydraulics affixed this 23rd *day of* July, 19 45

Steven E. Klein

State Supervisor of Hydraulics.

ENGINEERING DATA

MUNICIPAL SUPPLY—

16. To supply the ~~city of~~ community in Van Trassell Garden Tracts & adjoining (Name)
land, in Pierce County, having a present population of .....
and an estimated population of ..... in 19.....

(a) Estimated present requirement 200 families

(b) Estimated future requirement .....

17. Construction work will begin on or before .....

18. Construction work will be completed on or before .....

Duplicate maps of the proposed ditch or other works, prepared in accordance with the rules of the State Supervisor of Hydraulics accompany this application.

WERNER & RITTER, INC.
(Name of applicant)

BY: James W. Bainbridge
Agent

Signed in the presence of us as witnesses:

(1) B. L. Robertson (Name), Olympia, Wn. (Address of witness)

(2) ..... (Name) ..... (Address of witness)

Remarks: Water has been used before 1917 for slaughter house.

STATE OF WASHINGTON, } ss.
COUNTY OF THURSTON.

This is to certify that I have examined the foregoing application together with the accompanying maps and data, and return the same for correction or completion, as follows: .....

In order to retain its priority, this application must be returned to the State Supervisor of Hydraulics, with corrections, on or before ....., 19..

WITNESS my hand this ..... day of ....., 19..

State Supervisor of Hydraulics.

G. S. No. 500—11-44—1M. 7151.

CERTIFICATE RECORD NO. 5, PAGE NO. 2267

STATE OF WASHINGTON, COUNTY OF Pierce

CERTIFICATE OF WATER RIGHT

(In accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the State Supervisor of Hydraulics thereunder.)

This is to certify, that WEBER & RITTER, INC.,

of Sumner, State of Washington, has made proof to the satisfaction of the State Supervisor of Hydraulics of Washington, of a right to the use of the waters of unnamed spring, a tributary of Salmon Creek, with point or points of diversion within the northwest quarter of Northeast quarter of Sec. 19, Twp. 20 N Range 5 E., W. M., for the purposes of domestic supply for community under Appropriation Permit No. 2348 issued by the State Supervisor of Hydraulics, and that said right to the use of said waters has been perfected in accordance with the laws of Washington, and is hereby confirmed by the State Supervisor of Hydraulics of Washington and entered of record in Volume 5, at Page 2267, on the 23rd day of July, 1945; that the right hereby confirmed dates from August 3, 1939; that the amount of water to which such right is entitled and hereby confirmed, for the purposes aforesaid, is limited to an amount actually beneficially used for said purposes, and shall not exceed 0.2 of a cubic foot per second.

A description of the lands under such right to which the water hereby confirmed is appurtenant, and the place where such water is put to beneficial use, is as follows:

PLACE OF USE			LEGAL SUBDIVISION	FOR IRRIGATION	
Section	Township	Range		No. Acres Described in Permit	No. Acres Actually Irrigated

LOCATION OF POWER PLANT			LEGAL SUBDIVISION	FOR POWER	
Section	Township	Range		H. P. Described in Permit	H. P. Actually Developed

Section	Township	Range	LEGAL SUBDIVISION	FOR OTHER USES
19	20 N.	5 E.W.M.	Van Tassell Garden Tracts	Domestic use for
			E½ of NW¼; E½ of SW¼	community

The right to the use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in Sections 6 and 7, Chapter 122, Laws of 1929.

WITNESS the seal and signature of the State Supervisor of Hydraulics affixed this 23rd day

MUNICIPAL SUPPLY—

16. To supply the ~~city of~~ community in Tassell Garden Tracts and land (Name) adjoining, in Pierce County, having a present population of _____ and an estimated population of _____ in 19____

(a) Estimated present requirement _____

(b) Estimated future requirement 200 families

17. Construction work will begin on or before _____

18. Construction work will be completed on or before _____

Duplicate maps of the proposed ditch or other works, prepared in accordance with the rules of the State Supervisor of Hydraulics accompany this application.

Webber & Ritter, Inc.
(Name of applicant)

By James W. Bainbridge
Agent

Signed in the presence of us as witnesses:

(1) B. L. Robertson (Name), Olympia, Wash. (Address of witness)

(2) _____ (Name), _____ (Address of witness)

Remarks: Was used before 1917 for slaughter house.

STATE OF WASHINGTON,
COUNTY OF THURSTON. } ss.

This is to certify that I have examined the foregoing application together with the accompanying maps and data, and return the same for correction or completion, as follows: _____

In order to retain its priority, this application must be returned to the State Supervisor of Hydraulics, with corrections, on or before _____, 19__

WITNESS my hand this _____ day of _____, 19__

State Supervisor of Hydraulics.

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
P.O. Box 47600 • Olympia, Washington 98504-7600
(360) 407-6000 • TDD Only (Hearing Impaired) (360) 407-6006

July 13, 1998

City of Sumner
1104 Maple St
Sumner WA 98390-1423

Dear City of Sumner:

Your claim to the use of historic water has been accepted in the 1997 claims registration. The registration number is on the bottom left hand side of the form. The law requires that we include the following language after registration of your claim:

> "The filing of a statement of claim does not constitute an adjudication of any claim to the right to use of waters as between the water use claimant and the state, or as between one or more water use claimants and another or others."

The acceptance of this statement of claim by the Department **does not** give you the right to use the water if you can't prove, in a superior court the historic use of the water.

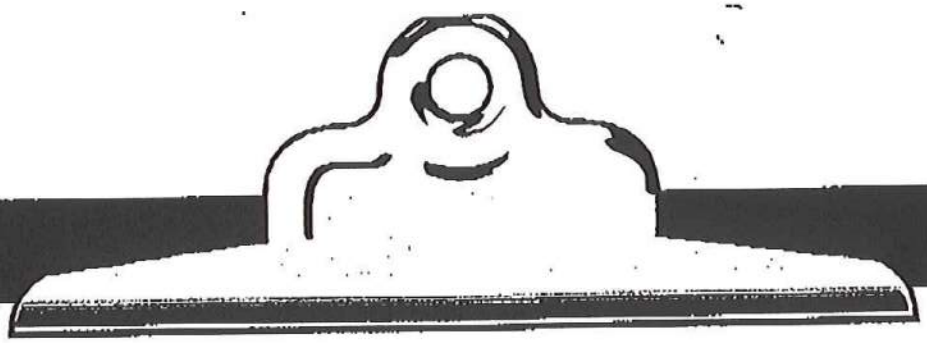
Please be aware under Chapter 90.14.068 RCW

> ....This reopening of the period for filing statements of claim shall not affect or impair in any respect whatsoever any water right existing prior to July 27, 1997. A water right embodied in a statement of claim filed under this section is subordinate to any water right embodied in a permit or certificate issued under Chapter 90.03 or 90.44 RCW prior to the date the statement of claim is filed with the Department and is subordinate to any water right embodied in a statement of claim filed in the water rights claims registry before July 27, 1997.

Sincerely,

Candy Pittman
Water Resources Program

Enclosure
Claim No. 300,571-572



Locating Documents To Support Your Water Right Claim

Evidence to support your claimed water right can come in many forms and from many places. Most of it will be old and historic in nature. Examples used in past adjudications to document how, when, or where the water system was developed and used include:

- Newspaper clippings which refer to the property or water system,
- Photographs that can establish a date and water use,
- Maps,
- Historical documents describing your property and/or water system (homestead documents, notices of appropriations, easement for ditches, etc.),
- Letters that would indicate water use or development,
- Books on the area that may be relevant,
- Tax statements or receipts for materials that show property and water use,
- County and state records,
- Chain of ownership (deeds that mention water rights), or
- Affidavits from individuals attesting to personal historic knowledge of the water system and water uses(commonly referred to as Old Timer Affidavits).

To conduct your search for historical evidence, you may want to consider looking in the following places:

- Your attic,
- Family scrapbooks or Bibles,
- Local museums or historical societies,
- State archives,
- Your local library
- Document files at Washington State universities
- County engineers' office (for maps of early roads that may show ditches and streams, etc.),
- County auditor's office (to track property ownership),
- Bureau of Reclamation (for old maps and surveys),
- Ecology's regional office nearest you (for copies of existing water right certificates or water right claims), and
- Local courthouse (copies of civil suits dealing with your water and/or property use).

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

STATEMENT OF WATER RIGHT CLAIM

FOR OFFICE USE ONLY
10/153
WRIA 00000984

1. CITY OF SUMNER
Name
1104 Maple Street
Mailing Address
Sumner WA 98390-1423
City State Zip
Phone No. (253) 863-8300

2. Date water was first put to use on your property *(see Instructions)* Month Jan and Year 1907

3. COMPLETE ONLY ONE BOX BELOW *(please read the instructions)*

3a. GROUND WATER	3b. SURFACE WATER (Give name if known)
☐ Well ☐ Infiltration Trench ☐ Other _____ Give Name	☐ _____ River ☐ _____ Lake ☐ _____ Creek ☒ Elbi Spring ☐ _____ Ditch ☐ _____ Pond ☐ Other _____
4a. INSTANTANEOUS QUANTITY _____ gpm *(See instructions 10 gpm=0.02 cfs ; 1 cfs=450 gpm)*	4b. INSTANTANEOUS QUANTITY 0.80 cfs *(See instructions 10 gpm=0.02 cfs ; 1 cfs=450 gpm)*
5a. ANNUAL QUANTITY OF WATER _____ af/y *(One acre foot = 325,581 gallons)*	5b. ANNUAL QUANTITY OF WATER 100 af/y *(One acre foot = 325,581 gallons)*

6. PURPOSE OF USE:
☐ Irrigation *(Number of acres irrigated)* _____
☐ Domestic Use *(Number of units)* _____
☐ Commercial *(Description)* _____
☐ Stockwater
☒ Municipal
☐ Other *(List all)* _____

7. PERIOD OF USE: ☒ Continuous or ☐ Seasonal From 1907 To Present

8. LOCATION OF THE POINT OF DIVERSION/WITHDRAWAL:
Approximately 2100 Feet (north, south) and 2300 Feet (east, west) From The S W Corner of Section 29
Being Within The N E 1/4 S W 1/4 of Section 29 T. 20 N., R. 5 (E.) or W.) W.M.

9. IF THE POINT OF DIVERSION/WITHDRAWAL IS LOCATED ON PLATTED PROPERTY:
Lot _____ Block _____ of _____ (Plat or Addition)
Section _____ T. _____ N., R. _____ (E. or W.) W.M.

10. LEGAL DESCRIPTION OF PROPERTY WHERE WATER IS USED:
City of Sumner Water Service Area Sections 12, 13, 24, & 25 T 20N, R 4E, W.M.
Pierce County
Within Section 18,19,29,30 31 & 32 T. 5 N., R. 5 (E. or W.) W.M., County Pierce

11. TAX PARCEL NUMBER: _____

12. LEGAL DOCTRINE: ☒ Appropriation ☐ Riparian ☐ Other _____

REGISTRATION NUMBER
300571

THIS IS NOT A WATER RIGHT

If this form is not fully completed, it will be returned.
I hereby swear that the above information is true and accurate to the best of my knowledge.

Signature: _____
Date: January 16, 1997

ECY 040-57 (7/97)

Ecology is an equal opportunity and affirmative

STATE O ASHINGTON
DEPARTMEN OF ECOLOGY

STATEMENT OF WATER RIGHT CLAIM

FOR OFFICE USE ONLY
17/53
WRIA 98000965

1. CITY OF SUMNER
Name
1104 Maple Street
Mailing Address
Sumner WA 98390-1423
City State Zip
Phone No. (253) 863-8300

2. Date water was first put to use on your property *(see instructions)* Month April and Year 1916.

3. COMPLETE ONLY ONE BOX BELOW *(please read the instructions)*

3a. GROUND WATER	3b. SURFACE WATER (Give name if known)
☐ Well ☐ Infiltration Trench ☐ Other _____ Give Name	☐ _____ River ☐ _____ Lake ☐ _____ Creek ☒ County Spring ☐ _____ Ditch ☐ _____ Pond ☐ Other _____
4a. INSTANTANEOUS QUANTITY _____ gpm *(See instructions 10 gpm=0.02 cfs ; 1 cfs=450 gpm)*	4b. INSTANTANEOUS QUANTITY 1.78 cfs *(See instructions 10 gpm=0.02 cfs ; 1 cfs=450 gpm)*
5a. ANNUAL QUANTITY OF WATER _____ af/y *(One acre foot = 325,581 gallons)*	5b. ANNUAL QUANTITY OF WATER 575 af/y *(One acre foot = 325,581 gallons)*

6. PURPOSE OF USE:
☐ Irrigation *(Number of acres irrigated)* _____
☐ Domestic Use *(Number of units)* _____
☐ Commercial *(Description)* _____
☐ Stockwater
☒ Municipal
☐ Other *(List all)* _____

7. PERIOD OF USE: ☒ Continuous or ☐ Seasonal From 1916 To Present

8. LOCATION OF THE POINT OF DIVERSION/WITHDRAWAL:
Approximately 4510 Feet (north) south) and 1500 Feet (east, west) From The S E. Corner of Section 19
Being Within The N W 1/4 N E 1/4 of Section 19 T. 20 N., R. 5 (E.) or W.) W.M.

9. IF THE POINT OF DIVERSION/WITHDRAWAL IS LOCATED ON PLATTED PROPERTY:
Lot _____ Block _____ of _____ (Plat or Addition)
Section _____ T. _____ N., R. _____ (E. or W.) W.M.

10. LEGAL DESCRIPTION OF PROPERTY WHERE WATER IS USED:
City of Sumner Water Service Area Sections 12, 13, 24 & 25 T20N, R4E, W.M.
Pierce County
Within Section 18,19,29,30,31 & 32 T. 5 N., R. 5 (E.) or W.) W.M., County Pierce

11. TAX PARCEL NUMBER: _____

12. LEGAL DOCTRINE: ☒ Appropriation ☐ Riparian ☐ Other _____

REGISTRATION NUMBER
300572

THIS IS NOT A WATER RIGHT

If this form is not fully completed, it will be returned.
I hereby swear that the above information is true and accurate to the best of my knowledge.

Signature: William J. Hamilton
Date: June 16, 1998

ECY 040-57 (7/97)

Ecology is an equal opportunity and affirmative action employer.

RE 1

RECEIVED
NOV 8 1965
STATE DEPT. OF HEALTH
ENGINEERING DIVISION

REPORT OF EXAMINATION

Date of application April 23, 1965 Date of Examination June 14, 1965 Appli. No. 18973

Name Robert N. Grainger, Inc. Address 9018 - 181st Ave. E., Sumner, Wash.

Quantity applied for 0.28 c.f.s. Use Community domestic supply

Source of appropriation Unnamed springs Tributary of Elhi Creek

Legal sub. NE¼SE¼ Sec. 32 Twp. 20 N., Rge. 5 E. County Pierce

~~Measured~~ estimated quantity 0.35 c.f.s. Probable low flow 0.35 c.f.s.

Quantity previously appropriated: W.T. 1.29 c.f.s. CWT. 1.29 c.f.s. E.T. 0.22 c.f.s.

Other use made of water Domestic supply

Diversion works contemplated ~~proposed~~ Concrete catch basin at headwaters of springs, pump and pipeline to homes

Other equipment

Irrigable acreage: Planned Present Feasible

Other water rights appurtenant to this land None recorded

Progress of project Not started

Protests None

Quantity recommended (total) 0.28 c.f.s., 26.9 acre-feet per year Irrig. Comm. Dom. 0.28 c.f.s., 26.9 acre-feet per year

Power Municipal Other uses

Department of Fisheries and Game report Approved

Special remarks and provisions:

Use of the waters to be appropriated under this application will be for a public water supply. State Board of Health rules require every owner of a public water supply to obtain written approval from the State Director of Health prior to any new construction or alterations of a public water supply. The applicant is advised to contact the Washington State Department of Health, Fourth Floor, Public Health Building, Olympia; with regard to the need for compliance.

over

An analysis of water use in western Washington has shown the average water requirement for domestic supply to be 140 gallons per capita per day. Allowing for an increase in the water requirement, the recommended annual diversion for community domestic supply for this system is based on an average daily requirement per person of 150 gallons. Therefore, for the estimated population of 160 (4 persons per home for 40 homes) to be served by this system, it is recommended that the annual diversion for community domestic supply be limited to 26.9 acre-feet per year.

As provided under RCW 43.21.130 and RCW 90.03.360, a master meter, individual service meters, or other suitable measuring devices shall be installed in this system to measure the total amount of the diversion. Records of the total monthly diversion shall be maintained by an official responsible for the management and operation of this water system, and this information shall be reported each year to the Supervisor of the Division of Water Resources. A standard form for reporting such information shall be sent annually to the manager of the system.

Applicant is advised that notice of proof of appropriation of water (under which the final certificate of water right issues) should not be filed until the permanent diversion facilities have been installed together with a distribution system of main line piping capable of furnishing water for domestic supply to all lots which are intended to be supplied under this application.

In accordance with section 90.03.290 R.C.W., I find that there is water available for appropriation from the source in question and that the diversion proposed in the application will not impair existing rights or be detrimental to the public welfare. Therefore, permit should issue as recommended above, subject to existing rights and indicated provisions.

Signed this 26 day of August, 1965

Dean Wood

DEAN WOOD, Engineer
Division of Water Resources

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
APPLICATION FOR CHANGE
REPORT OF EXAMINATION
TO APPROPRIATE PUBLIC WATERS OF THE STATE OF WASHINGTON

☐ Surface Water (Issued in accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the Department of Ecology.)

☒ Ground Water (Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the Department of Ecology.)

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
March 18, 1954	3584	8391	2151

NAME
City of Sumner

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
1104 Maple Street Ste 260	Sumner	Washington	98390

PUBLIC WATERS TO BE APPROPRIATED

SOURCE
Dieringer Well
TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE FEET PER YEAR
	95	6.25

QUANTITY, TYPE OF USE, PERIOD OF USE		
6.25 Acre-feet per year	Municipal supply	Year-round, as needed

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION--WITHDRAWAL
700 feet South and 700 feet East of the Northwest corner of Section 7.

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
Lot 11, NW¼ NW¼	7	20	5E	10	Pierce

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

The place of use (POU) of this water right is the service area described in the most recent Water System Plan/Small Water System Management Program approved by the Washington State Department of Health, so long as City of Sumner is and remains in compliance with the criteria in RCW 90.03.386(2). RCW 90.03.386 may have the effect of revising the place of use of this water right.

DESCRIPTION OF PROPOSED WORKS

Well

DEVELOPMENT SCHEDULE

BEGIN PROJECT BY THIS DATE:	COMPLETE PROJECT BY THIS DATE:	WATER PUT TO FULL USE BY THIS DATE:
Started	Completed	In-use

REPORT

BACKGROUND:

On September 20, 2005 Bill Shoemaker on behalf of the City of Sumner filed an *Application for Change* to change the purpose and place of use to Ground Water Certificate 2151. The water source and service area of the City of Sumner are situated within Water Resource Inventory Area 10, the Puyallup-White River Watershed.

The intent of this request is to formally integrate this well with the rest of the City of Sumner's municipal system.

Under RCW 90.44.100, Ecology is permitted to change an existing ground water certificate. Ecology may issue such a change only after publication of a notice of the application and investigations as prescribed in the case of an original application.

A public notice detailing this proposed change was published in the Tacoma News Tribute on January 5th and 12th of 2006, and no protests were received as a result of the public notice.

In evaluating a request to change a water right under RCW 90.44.100 and RCW 90.03.380, Ecology must find that the proposed change does not alter the original finding, i.e. that: (1) water is available for appropriation; (2) the appropriation/change is for a beneficial use; (3) the change will not impair existing water rights; and (4) the change will not be detrimental to the public interest.

Based on my investigation, I recommend the approval of this request and the issuance of a superseding certificate.

INVESTIGATION:

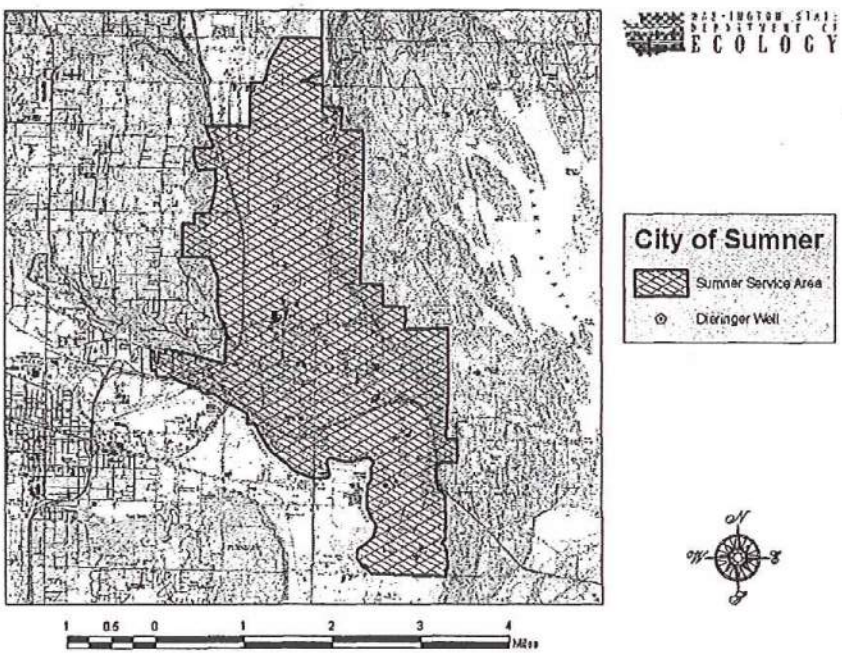
In consideration of this application I reviewed the information submitted with the application, area well logs, water right records, applicable geological reports, Water System plans, and maps.

Project Site

The City of Sumner and surrounding valley is situated in the ancient floodplain of the Puyallup and White Rivers in north Central Pierce County. Sumner is located eleven miles southeast of Tacoma and three miles northeast of Puyallup.

The subject well is referred to as the Dieringer School Well. Withdrawals from this well are authorized by water right certificate 2151 in the amount of 250 gpm, and 22 acre-feet per year. The water right was issued for domestic supply and fire protection for the Dieringer School District No. 343.

Sumner intends to use this source as presently constructed. This well provides a direct source of water to the City's North tank which supplies fire flow needs of the North Sumner Industrial Park.



Attributes of the Original Certificate 2151

Name on Certificate:	Dieringer School District No. 363
Priority Date:	March 18, 1954
Instantaneous Quantity:	250 gpm
Annual Quantity:	22 acre-feet per year (afy)
Point of Withdrawal:	Section 7, Township 20 North, Range 5 East
Purpose of Use:	Domestic Supply and fire protection
Period of Use:	Year-round as needed
Place of Use:	*Lot 11 of White River Garden Tracts Section 7, T. 20 N., R. 5 E.W.M.,*

Proposed Change

Name of Applicant:	City of Sumner
Date of Application for Change:	September 20, 2005
Point of Withdrawal:	Same
Period of Use	Same
Purpose of Use	Municipal Supply
Place of Use:	Area served by the City of Sumner as Described in a Department of Health Water System Plan

City of Sumner Water System

The City of Sumner water system consists of three sets of springs and two wells and consists of two pressure zones. The main zone is supplied by three springs (Sumner, Weber and County Springs), and two wells (South and Cemetery Well). A much smaller pressure zone, consisting of approximately 25 houses around South Tank is supplied by Elhi Spring.

The City of Sumner owns and exercises control over two protected watersheds. The northern watershed encompasses Sumner, Weber and Country Springs, the southern watershed encompasses Elhi Springs. Both watersheds are steeply sloped.

The Sumner water system draws about 1,700 acre-feet of water each year. Water demand is expected to double in 20 years. The new Water Comprehensive Plan estimates that in the year 2023 approximately 3,150 acre-feet will be needed.

The City of Sumner's water system plan (WSP) is currently being reviewed by the State Department of Health and Ecology. The final WSP will include a detailed inventory of the City's current water rights.

Historic Water Use

Applications for Change to ground water rights are governed by RCW 90.44.100, which states in part that: Water rights which have been put to full beneficial use may be transferred to another place of use without loss of priority if such change can be made without detriment or injury to other existing rights.

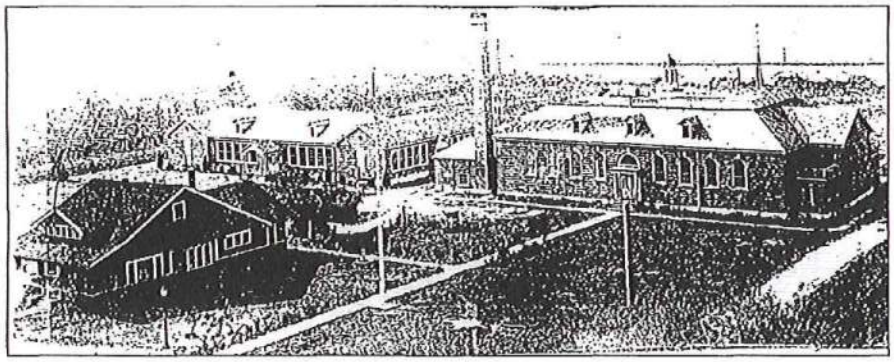
Ecology is required by law to perform a tentative determination of the extent and validity of a water right when making a change. This involves looking at the history of the original water right and determining how much water has been put to full beneficial use.

The purpose of use originally authorized by the existing certificate is domestic supply and fire protection. The system was operated as a Class A water system from 1955 to the closing of the school in 1994. The original allocation of 22 acre-feet per year is based on total demand for this large school complex which included domestic requirement for students, staff, a shop building as well as two homes, minor lawn irrigation, and maintenance of a swimming pool\gym complex. However, the rational that the original allocation of 22 acre-feet was based on appears to be overly generous.

Meter records are not available during the time that the school was operated. Accordingly, I have estimated water use on the following criteria:

Use	Calculation	Source	Annual Use
Students and staff	280 @ 10 gal/day	Estimated	3.0 acre-feet
Swimming Pool/gym	40,000	Estimated	1.0 acre-foot
Other Domestic (2 homes, and shop and club house)		City records	.75 acre-feel
Sumner Golf Clubhouse		City records	0.5 acre-feet
Irrigation (lawn)	½ acre	WA Irrigation Guide.	1.0 acre-foot
Total			6.25

The well has historically produced 95 gallons per minute, at least since the 1970's until recently conducted rehabilitation work.



The first two building in the historical Dieringer School complex were built between 1921 and 1928.

Sumner entered into an agreement to acquire the source/system in 1995, operating it as a stand-alone system, with the primary domestic recipient of water being the Sumner Meadows Golf course. The City has utilized the well as an addition source of water for the northern portions of its system, especially in the summer to peaking demands.

It appears that the quantities of 95 gpm, and 6.25 acre-feet can be reasonable documented as having been put to beneficial use and are eligible to be changed. Use of the well has increased since the City acquired it; however the right is limited by the historical usage.

This request will not change the quantities of water historically used, but will change the purpose of use to municipal to reflect the current use of this well. This water right is fully perfected, has not been abandoned or relinquished.

The Dieringer Well

The Dieringer Well is located in the White River Valley, within the city limits of Sumner. The geological materials underlying the White River valley consist of several hundred feel of unconsolidated alluvial sediment and semi-consolidated glacial and lacustrine deposits.

The City of Sumner rehabilitated the well in 1994. The results of the testing and construction efforts have been documented in the report entitled: *Dieringer Well Rehabilitation and Testing, Sumner, Washington, September 28, 2004, Prepared for Parametrix, Inc., Submitted by SLR International Corp.*

The hydrostratigraphy of the Dieringer wells site is complex and the sources of recharge to the water bearing units and direction of ground water flow within the units are uncertain. Ground water occurring within deeper (greater than 100 feet) coarse-grained aquifers beneath the White River valley typically yields several hundred to a few thousand gallons per minute, and artesian pressure in the aquifers results in flowing wells.

The 408 foot deep Dieringer Well is completed in a deep confined sand and gravel aquifer and is flowing at the surface. Water quality is excellent. The well was originally constructed in April 1954. The surface elevation is approximately 75 feet above sea level.

Before rehabilitation, the Dieringer well consisted of 237 feet of 12-inch diameter steel casing and 171 feet of 10-inch diameter steel casing. The 12-inch casing was perforated at depths of 210 to 235 feet below ground surface. At the time of construction in 1954, the well reportedly yielded 500 gpm with 16 feet of drawdown.

Affects to Neighboring Water Users

This change will not result in an enlargement or increased use of this source, accordingly it is not anticipated that neighboring water users will be affected by this request. Water will remain in use for primarily domestic purposes, but this water right certificate will be formally modified to reflect the municipal use of the water within a larger regional service area.

The City currently has 5 other pending Applications for Change -- they have requested that this one be processed prior to their other competing application.

Affects to Instream Resources

As the actual operation of this well is not being changed, it is not anticipated that the change in purpose of use will exacerbate impacts to instream flows in the basin.

Service Area/Place of Use

I recommend the issuance of superseding water right documents that describe the purpose of use as "municipal supply", and describe the place of use as:

> The place of use (POU) of this water right is the service area described in the most recent Water System Plan approved by the Washington State Department of Health, so long as the City of Sumner remains in compliance with the criteria in RCW 90.03.386(2). RCW 90.03.386 may have the effect of revising the place of use of this water right.

FINDINGS AND CONCLUSIONS:

Applications for change of water rights are governed by RCW 90.44.100, which states, in part, that the holder of a valid right to withdraw public ground waters may, without losing his priority of right, change the manner or the place of use of the water.

Such amendment shall be issued by the Department of Ecology only on the condition that the change will not enlarge the quantity of water used or impair other rights. It is my conclusion that these criteria are satisfied and this change will not be detrimental to the public welfare.

- It appears that the quantities of 95 gpm, and 6.25 acre-feet can be reasonably documented as having been put to beneficial use and are eligible to be changed.

- The City of Sumner has operated this well as a stand-alone source for several years prior to physically connecting it with the rest of their system. Water from this well will continue to be put to beneficial use public water supply purposes, but the purpose of use will be classified as "municipal supply" so as to capture the full range of potential uses.

- Because the original well is being utilized, and this request will be authorized in the quantities historically used, this Application for Change is not anticipated to have any greater impacts to the instream flows of the White River than prior to the change. This change will not cause any detrimental environmental affect on the natural environment.

- No detriment to the public interest could be identified during the investigation of this *Application for Change*. This transfer will be beneficial to the public interest by providing a reliable drinking water source. The Department of Ecology encourages the development of public water supply systems to provide water to regional areas and developments (RCW 90.54.020 (8)). Ecology recognizes the access to a reliable source of public water to benefit the public living within the central Pierce County region.

In accordance with Chapters 90.03 and 90.44 RCW, I find that changing the place and purpose of use authorized by this certificate is not detrimental to the public welfare.

RECOMMENDATIONS:

I recommend approval of this Application for Change and issuance of a superseding certificate in the amount of 95 gpm, and 6.25 acre-feet from the Dieringer School Production Well.

This decision is subject to the following provisions.

PROVISIONS:

This certificate supersedes that of same number issued on February 15, 1955, and is subject to the following provisions.

The water appropriated under this application will be used for public water supply. The State Board of Health rules require public water supply owners to obtain written approval from the Office of Water Supply, Department of Health, 1112 SE Quince Street, PO Box 47890, Olympia, Washington 98504-7890, prior to any new construction or alterations of a public water supply system.

An approved measuring device shall be installed and maintained for each of the sources identified by this water right in accordance with the rule "Requirements for Measuring and Reporting Water Use", Chapter 173-173 WAC.

Water use data shall be recorded weekly. The maximum rate of diversion/withdrawal and the annual total volume shall be submitted to Ecology by January 31st of each calendar year.

The following information shall be included with each submittal of water use data: owner, contact name if different, mailing address, daytime phone number, WRIA, Permit/Certificate/Claim No., source name, annual quantity used including units, maximum rate of diversion including units, monthly meter readings including units, monthly meter readings including units, peak monthly flow including units, Department of Health WFI water system number and source number(s), purpose of use, well tag number, pressurized diversion and period of use. In the future, Ecology may require additional parameters to be reported or more frequent reporting. Ecology prefers web based data entry, but does accept hard copies. Ecology will provide forms and electronic data entry information.

Chapter 173-173 WAC describes the requirements for data accuracy, device installation and operation, and information reporting. It also allows a water user to petition Ecology for modifications to some of the requirements. Installation, operation and maintenance requirements are enclosed as a document entitled "Water Measurement Device Installation and Operation Requirements".

Department of Ecology personnel, upon presentation of proper credentials, shall have access at reasonable times, to the records of water use that are kept to meet the above conditions, and to inspect at reasonable times any measuring device used to meet the above conditions.

The Water Resources Act of 1971, Chapter 90.54 RCW specifies certain criteria regarding utilization and management of the waters of the State in the best public interest. Favorable consideration of this application has been based on sufficient waters available, at least during portions of the year. However, it is pointed out to the applicant that this use of water may be subject to regulation at certain times, based on the necessity to maintain water quantities sufficient for preservation of the natural environment.

"Water System Planning and Conservation - Issuance of this approval is subject to implementation of all required conservation and planning standards. The Department of Health (DOH), Office of Drinking Water is directed by the legislature to adopt water use efficiency rules. These new rules (Chapter 246-290 WAC) are a requirement of the Municipal Water Supply – Efficiency Requirements Act, Chapter 5, Laws of 2003, First Special Session. The water right holder is specifically required to address Water Use Efficiency Planning Requirements, Distribution Leakage Standards, and Water Use Efficiency Goal Setting and Performance Reporting."

REPORTED BY: Jim E Wahl Date: 4/12/06

FINDINGS OF FACT AND DECISION

Upon reviewing the above report, I find all facts, relevant and material to the requested Application for Change have been thoroughly investigated. Furthermore, I find water is available for appropriation and the appropriation as recommended is a beneficial use and will not be detrimental to existing rights or the public welfare.

Therefore, I ORDER a superseding certificate be issued under Water Right Number 2151, subject to existing rights and indicated provisions, to allow appropriation of public water for the amount and uses specified in the foregoing report.

Signed at Olympia, Washington, this 12th day of April, 2006.

Thomas Loranger

Thomas Loranger
Water Resources Section Manager
Southwest Regional Office

Water Right Self-Assessment Form for Water System Plans

331-372 • 1/13/2017

All water right permits, claims, and certificates must be evaluated in a water right self-assessment for all sources used to supply the water system. The self-assessment compares the parameters and other limitations of existing water rights against current and forecasted water production, as described in your water system plan, to determine whether the rights are adequate to serve your system's current and future water needs.

You must account for all sources of supply and total quantities of water withdrawn from the source. If you purchase water from another purveyor through a non-emergency intertie, you must complete the INTERTIES section of the self-assessment.

A Note on Exempt Wells

If you're seeking DOH approval of a new Group A or Group B water system using an exempt well, you must complete the self-assessment, although certain fields will not apply. Talk to your DOH regional planner about using the Water Right Self-Assessment form for a Small Water System Management Program instead of this version.

Local governments must ensure that an adequate potable water supply is available from the exempt well before issuing a building permit. Before developing a permit exempt well, check with your local authorities on their criteria for establishing an adequate potable water supply for your planned public water system.

Water Right Parameters

Below is a brief description of the parameters associated with a typical water right. For the self-assessment, you only need to describe the last two bulleted items if they apply to your water rights.

- **Source Type** – this refers to whether the source is surface water, groundwater or a spring.
- **Source Location** – this refers to the location of points of groundwater withdrawal or surface water diversion for each right.
- **Purpose of Use** – this refers to the type of use, such as municipal water supply, community domestic, industrial or agricultural purposes.
- **Place of Use** – this describes where water can be put to beneficial use under the right. Under the 2003 Municipal Water Law, RCW 90.03.386, the place of use for a water right held for municipal water supply purposes may be the system's service area as identified in an approved water system plan or small water system management program. See Ecology Policy 2030 for information on how Ecology administers the Municipal Water Law.

Period of Use – this refers to time-of-year limitations in which the water right may be put to use. If any water right has a time-of-year limitation, please include this information in the INTERRUPTIBLE WATER RIGHTS section.

Provisions or Limiting Conditions – this refers to any provisions or conditions placed on the water right. If a water right has a limiting condition or other provision, such as a collection and reporting requirement, other than a time-of year limitation, include this information in the ADDITIONAL COMMENTS section at the bottom of the self-assessment and in the water system plan narrative.

See Ecology Policy 1040 for more information on water right terminology. If you have questions about your water rights, please contact the Ecology regional office in your area.

Completing the Water Right Self-Assessment Form

The self-assessment is a Word document to allow users to make changes or to expand the document. You may use another format, if preferred, as long as all required information is included. Below is a description of all fields and how to complete them. This form is divided into four different sections. Each section is described in the headings below.

See the column identifiers (A, B, C, etc) at the bottom of each column for guidance in completing the necessary calculations.

Water Right Permit, Certificate, or Claim Number: This number is assigned by Ecology when a permit application is filed. It's listed at the top of the permit or certificate. For water right claims, this is the registration number stamped in the lower left hand corner of the claim form.

WFI Source #: Identify the individual sources (e.g. well #1, well #2) as defined on the DOH Water Facilities Inventory form. If a water right is associated with multiple sources, list all sources in the same row in this column. If a source is associated with multiple water rights, identify each water right on a separate row.

If you have any source(s) that is not currently being used (categorized as standby, back-up, or emergency), and the source has an associated water right that is not listed in column #1, please include the source and water right information in the ADDITIONAL COMMENTS section. This will identify that the source is still intended for a beneficial use under RCW 90.03.015(4). See Ecology Policy 1040.

EXISTING WATER RIGHTS SECTION *(olive green color, top section)*

This section refers to existing water rights. It does not include any water right applications that have been submitted to Ecology.

Primary Qi (Instantaneous Quantity): This is also known as instantaneous flow rate. It's the amount of water allowed to be taken under the right from the source during a period of peak operation. For surface water, this is generally expressed in terms of cubic feet per

second (cfs). For groundwater, this is generally expressed in terms of gallons per minute (gpm). One cfs equals 448.8 gpm. Please indicate the units of measurement you are using for each source. If there are situations where the flow rate will be limited (e.g. limitations established on the source when other sources are utilized), please note them in the ADDITIONAL COMMENTS section in the form and in the WSP narrative.

Non-Additive Qi: This term was formally known as "supplemental." Your water rights may use the old terminology. See Ecology Policy 1040 for more information. Not all water rights have non-additive quantities. If a water right has non-additive Qi quantities, include the non-additive quantity in this field. This is generally listed in the "quantity, type of use, period of use" section on both permits and certificates. *Non-additive quantities should not be included in the primary Qi totals.*

Primary Qa (Annual Quantity): This is the amount of water that can be taken from the source under the right on an annual basis. It's usually expressed in terms of acre-feet. An acre-foot is the amount of water necessary to submerge an acre of land to a depth of one foot. One acre-foot equals 43,560 cubic feet or 325,851 gallons of water.

Non-Additive Qa: This term was formerly known as "supplemental." Your water rights may use the old terminology. See Ecology Policy 1040 for more information. Not all water rights have non-additive quantities. If a water right has non-additive Qa quantities, include the non-additive quantity in this field. This is generally listed in the "quantity, type of use, period of use" section on both permits and certificates. *Non-additive quantities should not be included in the primary Qa totals.*

CURRENT SOURCE PRODUCTION SECTION *(light green color, top section)*

This section refers to how much water is withdrawn from the source under each water right for the most recent full calendar year. You will need to determine any excess or deficiency for each water right after calculating how much water was withdrawn compared to how much water is allowed under each water right. If demand has decreased over past years, you may wish to include historic maximum production information in the ADDITIONAL COMMENTS section. This will provide a more complete picture of the use of your water rights.

Use the water use data and demand projections from your water system plan to define current and projected water needs. You can determine if you'll need additional water rights based on the comparison of existing water rights, current water production, and projected 10- and 20-year needs.

Total Qi (Instantaneous Quantity): This refers to the total maximum instantaneous flow rate withdrawn from the source under each water right during the most recent calendar year. For surface water, this is expressed in terms of cubic feet per second (cfs). For groundwater, this is expressed in terms of gallons per minute (gpm). One cfs equals 448.8 gpm.

Current Excess or Deficiency (Qi): Please calculate the excess or deficiency for each water right after comparing the total amount withdrawn against each water right. Please use parentheses for deficient amounts.

Total Qa (Annual Quantity): This refers to the total volume of water withdrawn from each source under each water right during the most recent calendar year. It's usually expressed in acre-feet.

Current Excess or Deficiency (Qa): Please calculate the excess or deficiency for each water right after comparing the total amount withdrawn against each water right. Please use parentheses for deficient amounts.

10-YEAR FORECASTED SOURCE PRODUCTION SECTION *(light blue color, top section)*

This section refers to how much water you project to withdraw from each source in ten years as determined in your water system plan. Please complete this section in the same manner (using the same units of measurement) as the current source production section using your 10-year forecasted amounts.

20-YEAR FORECASTED SOURCE PRODUCTION SECTION *(darker blue color, top section)*

This section refers to how much water you project to withdraw from each source in twenty years as determined in your water system plan. Please complete this section in the same manner (using the same units of measurement) as the current source production section using your 20-year forecasted amounts. If you are unable to provide 20-year forecasts for each source, you may choose to include the combined 20-year total at the bottom.

PENDING WATER RIGHTS SECTION *(second section of form)*

Please complete this section for any water right applications that have been submitted to Ecology. Please include the application number, whether it's a new or a change application, the date submitted, and the total quantities requested.

INTERTIES SECTION *(third section of form)*

This section must be completed by purveyors who purchase any amount of wholesale water. If your system sells water to another public water system, include the quantity sold in the CURRENT SOURCE PRODUCTION section.

Purchasers of wholesale water must account for all water obtained through the intertie for non-emergency supply purposes. This is to ensure that all sources of supply are considered when evaluating whether new water rights are needed within 20 years.

Please identify the maximum quantity of water, expressed in the same manner as the above sections, allowed under each intertie contract. If there are limiting conditions or temporary

agreements that effect the long-term use of the intertie, you must account for such limiting conditions when evaluating the current and forecasted water supply needs in your water system plan.

Finally, purchasers of wholesale water are responsible for ensuring that the underlying water right (held by the purveyor selling water) are adequate for such use. You should confirm that the selling system has accounted for the wholesale area in their water system plan to ensure that the water right authorizes the distribution of water through the intertie.

INTERRUPTIBLE WATER RIGHTS SECTION *(bottom section of form)*

This section refers to water rights that have an annual time-of-year interruption. Please complete this section for any water right listed in the above fields that has a time-of-year interruption. Please include the water right number, describe the limitation, and the time period of interruption. Purveyors with interruptible rights should develop a water shortage response plan as part of their water system plan to describe how demand will be met during periods of interruption through aggressive demand-side conservation, fixing leaks or other means.

ADDITIONAL COMMENTS SECTION *(bottom section of form)*

If the system has any source that is not currently being used on a regular basis (such a source may be categorized as stand-by, back-up, emergency), you should identify the source in this section if the source has an associated water right that is not listed in the above sections. The purpose is to identify that such water rights are still intended for a future beneficial use as required under RCW 90.03.015(4). See Page 2, Item 9 (b) in ECY Policy 2030. For these water rights, please briefly describe the future intended use of the source and when you expect to utilize the water right. This does not refer to sources categorized as seasonal sources.

You should also include any other comments in this section that will explain aspects of your water right portfolio that are not identified above.

Water Right Self-Assessment Form for Water System Plan

Mouse-over any link for more information. Click on any link for more detailed instructions.

Water Right Permit, Certificate, or Claim # *If water right is interruptible, identify limitation in yellow section below	WFI Source # If a source has multiple water rights, list each water right on separate line	Existing Water Rights Qi= Instantaneous Flow Rate Allowed (GPM or CFS) Qa= Annual Volume Allowed (Acre-Feet/Year) This includes wholesale water sold				Current Source Production – Most Recent Calendar Year Qi = Max Instantaneous Flow Rate Withdrawn (GPM or CFS) Qa = Annual Volume Withdrawn (Acre-Feet/Year) This includes wholesale water sold				10-Year Forecasted Source Production (determined from WSP) This includes wholesale water sold				20-Year Forecasted Source Production (determined from WSP) This includes wholesale water sold			
		Primary Qi Maximum Rate Allowed	Non-Additive Qi Maximum Rate Allowed	Primary Qa Maximum Volume Allowed	Non-Additive Qa Maximum Volume Allowed	Total Qi Maximum Instantaneous Flow Rate Withdrawn	Current Excess or (Deficiency) Qi	Total Qa Maximum Annual Volume Withdrawn	Current Excess or (Deficiency) Qa	Total Qi Maximum Instantaneous Flow Rate in 10 Years	10-Year Forecasted Excess or (Deficiency) Qi	Total Qa Maximum Annual Volume in 10 Years	10-Year Forecasted Excess or (Deficiency) Qa	Total Qi Maximum Instantaneous Flow Rate in 20 Years	20-Year Forecasted Excess or (Deficiency) Qi	Total Qa Maximum Annual Volume in 20 Years	20-Year Forecasted Excess or (Deficiency) Qa
7838 Salmon (Sumner) Springs		2,244 gpm		1,008 ac-ft		899 gpm[1]	2,240 gpm[1]	726 ac-ft[1]	812 ac-ft[1]	951 gpm		1,497 ac-ft		899 gpm		1,633 ac-ft	
S2-21979C Salmon (Sumner) Springs		561 gpm		900 ac-ft													
2266 Crystal (Weber #1) Springs		112 gpm		181 ac-ft													
2267 Un-named (Weber #2) Springs		90 gpm		145 ac-ft		667 gpm[1]		696 ac-ft[1]		653 gpm				667 gpm			
S2-300572CL (County Springs)		799 gpm			675 ac-ft												
G2-23281C South Well		1,000 gpm		542 ac-ft	258 ac-ft	655 gpm	345 gpm	159 ac-ft	383 ac-ft	0 gpm[2]		561 ac-ft[3]		0 gpm[2]		561 ac-ft[3]	
CG2-21980 and CG2-23281 Central Well			1050 gpm	0 ac-ft	561 ac-ft	1050 gpm	0 gpm	56 ac-ft	(56 ac-ft)	1050 gpm				1050 gpm			
G2-21980C West Well		250 gpm		100 ac-ft		123 gpm	127 gpm	14 ac-ft	86 ac-ft	246 gpm				250 gpm			
2151-A Dieringer Well)		95 gpm		6.25 ac-ft		236 gpm	(141 gpm)	18 ac-ft	(12 ac-ft)	95 gpm		6 ac-ft		95 gpm		6 ac-ft	
S2-300571CL Elhi Springs		360 gpm			100 ac-ft	0 gpm		0 gpm		0 gpm				90 gpm			
	TOTALS =	5,511 gpm		2,882 ac-ft		3,630 gpm	2,571 gpm	1,669 ac-ft	1,213 ac-ft	2,995 gpm	125 gpm	2,064 ac-ft	0 ac-ft	3,051 gpm	(39 gpm)	2,200 ac-ft	0 ac-ft
Column Identifiers for Calculations:		A		B		C	=A-C	D	=B-D	E	= A-E	F	=B-F	G	=A-G	H	=B-H

PENDING WATER RIGHT APPLICATIONS: Identify any water right applications that have been submitted to Ecology.

Application Number	New or Change Application?	Date Submitted	Quantities Requested			
			Primary Qi	Non-Additive Qi	Primary Qa	Non-Additive Qa
CG2-21980, CG2-21980, and	Change	12/23/09	2250 gpm[3]		1580 ac-ft[3]	
G2-30534	New	10/23/09				

INTERTIES: Systems receiving wholesale water complete this section. Wholesaling systems must include water sold through intertie in the current and forecasted source production columns above.

Name of Wholesaling System Providing Water	Quantities Allowed In Contract		Expiration Date of Contract	Currently Purchased Current quantity purchased through intertie				10-Year Forecasted Purchase Forecasted quantity purchased through intertie				20-Year Forecasted Purchase Forecasted quantity purchased through intertie			
	Maximum Qi Instantaneous Flow Rate	Maximum Qa Annual Volume		Maximum Qi Instantaneous Flow Rate	Current Excess or (Deficiency) Qi	Maximum Qa Annual Volume	Current Excess or (Deficiency) Qa	Maximum Qi 10-Year Forecast	Future Excess or (Deficiency) Qi	Maximum Qa 10-Year Forecast	Future Excess or (Deficiency) Qa	Maximum Qi 20-Year Forecast	Future Excess or (Deficiency) Qi	Maximum Qa 20-Year Forecast	Future Excess or (Deficiency) Qa
1															
2															
3															
TOTALS =															
Column Identifiers for Calculations:	A	B		C	=A-C	D	=B-D	E	=A-E	F	=B-F	G	=A-G	H	=B-H

INTERRUPTIBLE WATER RIGHTS: Identify limitations on any water rights listed above that are interruptible.

Water Right #	Conditions of Interruption	Time Period of Interruption
1		
2		
3		

ADDITIONAL COMMENTS:

Note 1: Flow from the Salmon (Sumner), Crystal (Weber #1), Un-named (Weber #2), and County Springs are combined into two separate collection systems prior to measurement. The current and forecasted flows have been entered to approximate the configuration of the physical collection works.

Note 2: The City has a temporary water right for the Central Well that allows that well to serve as an additional point of withdrawal for the South and West well water rights.

Note 3: The City's pending application does not differentiate between the Primary and Non-Additive quantities being requested. It is anticipated that some portion of these requested rights may be non-additive to the City's larger portfolio of rights.

Appendix H

Water System Sanitary Survey Report

STATE OF WASHINGTON
DEPARTMENT OF HEALTH
NORTHWEST DRINKING WATER REGIONAL OPERATIONS
20425 72nd Avenue South, Suite 310, Kent Washington 98032-2388

August 12, 2016

TONY UTANIS
CITY OF SUMNER
1104 MAPLE STREET SUITE 260
SUMNER WA 98390

Subject: Sumner, City of; ID #85120
Pierce County
Results of 2016 Sanitary Survey

Dear Mr. Utanis:

Thank you for you and Shaun Piper taking time to meet with me during my recent Sanitary Survey visit. Sanitary Surveys are the Department of Health's (DOH) tool to conduct routine inspections of public water systems and provide the agency the opportunity to offer technical assistance to improve water system operations and enhance protection of public health. However, there are a number of items that need to be addressed. There were a number of significant deficiencies that have been identified. Most should take relatively little time to correct. Note the observations in the report regarding your cross connection control program and the operation of the West Well. While not classified as significant deficiencies they require your immediate attention.

A comprehensive report and breakdown of survey costs are included with this letter. A number of findings and recommendations were generated from the survey. The following is a list of definitions for deficiencies, findings, and recommendations.

Significant Deficiency - A deficiency that directly creates a significant public health risk. *It must be addressed within 45 days of the date of the report.*

Significant Finding - A defect or problem which, if left unaddressed, creates a significant risk to the physical safety, security, or reliability of the public drinking water supply. *It must be addressed within 45 days of the date of the report.*

Observation - A sanitary survey finding in which a regulatory requirement is not met, and the problem or defect is not categorized as a significant deficiency or significant finding.

Recommendation - An action item that will improve the Public Health protection of the water system and/or improve operations.

The following is a brief listing of findings. More detailed explanations of each can be found in the report.

Significant Deficiencies (*must be addressed in 45 days*)

- At least one of the spring boxes (Crystal Springs, see photos) had an unscreened vent. All spring box vents must be protected with a fine mesh screen.
- All sources need raw water sample taps. The following sources did not appear to have a raw water sample tap: West Well and Dieringer Well.
- Ehli Spring – There is an unprotected surge pipe vent in the old reservoir building that must be screened (see photos). This is a direct path to water flowing into the storage tanks.
- The vent screens on all of the reservoirs were outfitted with wide mesh screens or grating. All reservoir vents need to be outfitted with fine mesh screen like 24 mesh screening. It is recommended that the City engineering staff evaluate the potential of fine mesh screening to freeze which could cause restrictions to air flow.

Significant Findings (*must be addressed in 45 days*)

- None

Observations

- See the Cross Connection Control section of the report. There are existing deficiencies in the City's Cross Connection Control Program.
- Refer to the West Well discussion in the Treatment section. There are existing deficiencies with the way the well is being operated.
- The Coliform Monitoring Plan needs to be updated to include raw water sampling required by the Groundwater Rule after a positive routine sample. The CMP also needs to include a map of the routine sample site locations.
- The water system's 2015 Water Use Efficiency Annual Performance Report reported 9.8% leakage and a three-year average of 10.2% leakage. This exceeds the maximum allowable leakage rate of 10% and this will require the City to develop a water loss action as part of the upcoming WSP update.

Recommendations

- It was reported that there was no low chlorine alarm for the springs' disinfection units. A low chlorine alarm should be established to warn operators of insufficient chlorine residuals.
- It is recommended that the hatch drain at the Sumner Springs weir vault be screened.

For the Significant Deficiencies, please send me documentation on how they have been addressed or a formal plan of action in how they will be addressed. *This documentation is due within 45 days of the date of this letter and report to avoid formal enforcement actions.* There were four identified Significant Deficiencies.

Drinking Water Regulations require that all Group A public water systems have a routine sanitary survey every 3 to 5 years. In order to receive credit for the survey, a sanitary survey fee must be paid. Enclosed is an invoice for $2,244.00 along with a worksheet that shows how the amount was determined. Please send your complete payment in the form of a check or money order within thirty days of the date of this letter to: **DOH, Revenue Section, P.O. Box 1099, Olympia, WA 98507-1099**.

Thank you for your efforts. Please feel free to contact me at (253) 395-6757 or john.ryding@doh.wa.gov if I can be of any assistance to you in answering any questions or in addressing any of these deficiencies, observations, and recommendations.

Sincerely,

John Ryding, P.E.
WSDOH Regional Engineer

Enclosures

cc: Tacoma-Pierce County Health Department

Washington State Department of Health
Division of Environmental Health
Office of Drinking Water

Office of Drinking Water
INVOICE
Engineering, Planning, and Sanitary Survey Review Form

TO: ANTHONY UTANIS
SUMNER, CITY OF
1104 MAPLE STREET STE 260
SUMNER WA 98390

ATTN: ACCOUNTS PAYABLE DEPT

Invoice Number	N02386
Invoice Date	August 12, 2016
Billing Period	30 days NW

DATE	DESCRIPTION	QTY	COST	AMOUNT
8/12/2016	SURVEY FEE SUMNER, CITY OF PIERCE COUNTY PWS ID 85120 DATE OF SURVEY: 7/18/2016	1	1	$2,244.00
	Total			**$2,244.00**
	Payment due within 30 days. Interest shall accrue at 1% per month after 30 days.			

Make Checks Payable to Department of Health
Return Lower Portion to:
Department of Health
PO Box 1099
Olympia, WA 98507-1099

Office of Drinking Water
Engineering, Planning, and Sanitary Survey Review Form

NAME	SUMNER, CITY OF
INVOICE NUMBER	N02386
INVOICE DATE	August 12, 2016 NW
AMOUNT	$2,244.00

DOH Form #331-332

Return to:
Department of Health
Revenue Section
PO Box 1099
Olympia, WA 98507-1099

For persons with disabilities, this document is available on request in other formats. To submit a request, please call 1-800-525-0127 (TTY 1-800-833-6388).

2 044129 00878

SANITARY SURVEY FEE WORKSHEET

Department of Health
Office of Drinking Water
Sanitary Survey Time Tracking

System Name	Sumner, City of	PWS ID #	85120
County	Pierce		
Surveyor	John Ryding	Date:	07/18/16

System over 10,000 Connections? NO

	Quantity				Cost
Department of Health Paid Costs	**Hours/Miles**				
Survey Program RO Coordination	1	$	102	$	102.00
Survey Program Administrative Support	1	$	102	$	102.00
Travel expenses (Mileage)	110		(# Miles) x ($.337/Mile)	$	37.03
Technical Assistance		$	102	$	-
Travel Time <10,000	3		102	$	306.00
Total Department of Health Costs to Perform All Surveys				$	547.03
Water System Paid Costs	**Hours**				
Scheduling, research, prep	2	$	102	$	204.00
Survey Field Work	9	$	102	$	918.00
Survey documentation – preparation of survey report to the purveyor	11	$	102	$	1,122.00
Additional Water System Paid Costs for systems serving 10,000 or more connections	**Hours**				
		$	-	$	-

Total Cost of Survey		$	2,791.03
Total Department of Health Unreimbursed Costs		$	547.03
Water System Paid Costs (Less than 10,000 Connections)		**$**	**2,244.00**

Washington State Department of Health

WATER SYSTEM SANITARY SURVEY REPORT

State of Washington Department of Health (DOH)
-- Northwest Drinking Water Operations --

Water System	**Sumner, City of**	**County**	Pierce
System Type	A - Community	**PWS ID#**	85120
System Manager	Anthony Utanis, Water Supervisor, (253) 299-5740	**System Owner**	City of Sumner
Surveyed By	John Ryding on 6/28 & 7/18/2016	**Report Date**	8/12/2016

Definitions of Findings, Observations, and Recommendations

- ***Significant Deficiency*** **(*SD*)** - A deficiency that directly creates a significant public health risk. *It must be addressed within 45 days of the date of the report.*
- ***Significant Finding*** **(*SF*)** - A defect or problem which, if left unaddressed, creates a significant risk to the physical safety, security, or reliability of the public drinking water supply. *It must be addressed within 45 days of the date of the report.*
- *Observation* (*Ob*) - A sanitary survey finding in which a regulatory requirement is not met, and the problem or defect is not categorized as a significant deficiency or significant finding.
- Recommendation (Rec) - An action item that will improve the Public Health protection of the water system and/or improve operations.

Water System Approval Status:	The water system is served by six permanent and 1 seasonal groundwater sources. The groundwater sources consist of 4 springs and 3 wells. The System's Water Facilities Inventory (WFI) lists 4,660 active residential connections and 504 non-residential services. The water system serves a full-time residential population of approximately 9,520 and has approved capacity to serve an unspecified number of Equivalent Residential Units.
Operating Permit	**Green** – The water system is in substantial compliance.

CAPACITY

Action Items? N ☒ Y ☐

Category	Narrative with Findings, Observations, and Recommendations
Source	The water system's sources have a total capacity of approximately 5.7 MGD as appearing on the Water Facilities Inventory (WFI). The Maximum Day Demand of the system in the past three years was approximately 3.3 MGD in 2015. The City is developing a new source (Central Well, S09) that has the physical capacity of 1,050 gpm but cannot be put on-line until water rights transfers and change applications are finalized by the Department of Ecology. Some of the capacity of the Central Well is anticipated come from transfers from the South and West Wells and changes to purchased water rights. A Water System Plan update is due next year and source capacity will be reviewed in the plan update.
Storage	The City maintains four reservoirs with a total of approximately 5 million gallons, which serves the main pressure zone. (Sumner Springs - 1.0 MGal, North Tank and South Tank –

	2.0 MGal each, and County Springs – 0.07 MGal). A fifth tank (Sumner Viewpoint) has a volume of 330,000 gallons and serves the upper pressure zone. It was reported that there appeared to be adequate storage for daily operations. There were no difficulties in maintain appropriate reservoir levels during periods of high demand. The water system's reservoir capacity will be reviewed in the upcoming Water System Plan (WSP) update.
Distribution	It was reported that 30 psi can be maintained in the distribution system during all times. Distribution system capacity will be revisited in the upcoming Water System Plan (WSP) update.

WATER QUALITY

Action Items? N ☐ Y ☒

Ob – The Coliform Monitoring Plan needs to be updated to include raw water sampling required by the Groundwater Rule after a positive routine sample. The CMP also needs to include a map of the routine sample site locations.

Category	Narrative with Findings, Observations, and Recommendations
Source	In general, the water system has kept up well with source monitoring requirements. The highest nitrate result in the last four years was 2.4 mg/L from Sumner Springs (S01) in 2014. There is detectable arsenic in Sumner Springs (S01), West Well (S05), and the South Well (S06). The highest result was 4 ug/L from the South Well in 2012. These results are below the arsenic MCL of 10 ug/L. The west Well has manganese (0.09 mg/L) that exceeds the Secondary MCL of 0.05 mg/L. The West Well is rarely used. The Dieringer Well (S07) has iron (0.97 mg/L) that exceeds the Secondary MCL of 0.3 mg/L. The Dieringer Well is used as a seasonal peaking source and it is blended with other water in the North Tank. Please consult with your current Water Quality Monitoring Schedule for the most recent source monitoring requirements.
Coliform	The water system has had an excellent coliform coliform history for the last five years. There have been no positive routine samples during this period. The water system is required to collect ten routine samples per month. The water system has a coliform monitoring plan (CMP) which includes the sample stations (as their routine sample sites) and repeat sample sites. *However, the CMP needs to be updated to include raw water sampling required by the Groundwater Rule after a positive routine sample. The CMP also needs to include a map of the routine sample site locations.*
Lead/Copper	The water system meets the lead and copper action levels and is due to collect 20 samples by the end of 2016. The 90th percentile result for lead was 0.003 mg/L with the highest result of 0.017 mg/L. The highest result exceeds the Action Level of 0.015 mg/L. The utility has communicated with the customer of this sample location and has given information on lowering lead exposure and ways to reduce the lead concentration at the sample site such as replacing the fixture used to collect the sample. The 90th percentile result for copper was 0.55 mg/L with a high result of 0.60 mg/L, which is well below the Action Level of 1.3 mg/L.
DBPs	The water system is required to collect one set of DBP samples per year. HAAs have not been detected in the past three years. The highest TTHM result in the same period was 12.5 ug/L in 2015. This value is well below the TTHM MCL of 80 ug/L.
SWTR/GWI	The wells are more than 50 feet deep and more than 200 feet from any apparent surface water source. The wells do not appear to have characteristics of groundwater under the influence of surface water (GWI). The spring sources have undergone evaluation as potential GWI sources.

	The sources were found to be groundwater and hydraulically connected to surface water. Therefore, the disinfection systems for the spring sources are required to provide a minimum CT of 6.

OPERATIONS AND MAINTENANCE

Action Items? N ☐ Y ☒

Ob – See the Cross Connection Control section of the report. There are existing deficiencies in the City's Cross Connection Control Program.

The water system's 2015 Water Use Efficiency Annual Performance Report reported 9.8% leakage and a three-year average of 10.2% leakage. This exceeds the maximum allowable leakage rate of 10% and this will require the City to develop a water loss action as part of the upcoming WSP update.

Category	Narrative with Findings, Observations, and Recommendations
Routine O&M	The water system appears to be adequately maintained. The water department maintains fire hydrants. Hydrants are flushed periodically. Approximately 17 miles of mains undergo leak detection annually. Distribution system valves are exercised during leak detection activities. Storage tanks are drained and inspected every other year. A Pax mixer has been installed in the South Tank to reduce water stagnation and prevent stagnation related water quality issues. All service meters will be updated to touch and radio read meters within the next year.
Complaints	There have been no complaints registered with DOH in the last 5 years.
Op Cert	The water system has one mandatory water system operator position. The mandatory position is required to be filled by an operator certified at the Water Distribution Manager 2 (WDM 2) level. Anthony Utanis (#4224) is listed as the lead operator and is certified as a WDM 3 and a cross connection control specialist (CCS). There are 14 other certified operators that are available to work on the water system. It appears that the water system meets the minimum operator certification requirements. When the Central Well is brought on-line the City will need to have a certified Water Treatment Plant Operator (WTPO). The certification level will most likely be a WTPO 1.
Metering and Production/ Consumption	All of the sources are metered and the meters are read daily. All but two service connections are metered. These are the Sonoco Products and American Autoclave connections. The Municipal Water Law requires service meters to be in place on all connections by 2017. *The water system's 2015 Water Use Efficiency Annual Performance Report reported 9.8% leakage and a three-year average of 10.2% leakage. This exceeds the maximum allowable leakage rate of 10% and this will require the City to develop a water loss action as part of the upcoming WSP update.* It was reported that leak detection has been conducted annually and this has led to repair of a number of significant leaks.
Water Rights	The City is currently addressing several water right issues with the Department of Ecology including transfers and reclassification of purchased water rights. It appears that there are adequate rights for the present and near future but the status of water rights for long term growth is unclear at this time. The Central Well is nearing construction completion but it was reported that it cannot be used until several water right transfers take place.

Cross Connection Control	The water system has a cross connection control plan that is being implemented by the City at City Hall. New service requests are reviewed for potential backflow assembly requirements by a City engineer (Joe Fessler) and assemblies are being tracked by Kelsey Jansen at City Hall. Neither Ms. Jansen or Mr. Fessler are certified as a Cross Connection Control Specialist (CCS)). It appears the Water Department relies heavily on City Hall for implementation of the CCC program. This is an unusual situation, especially for a city the size of Sumner. WAC 246-290-490 and WAC 246-292 require that a DOH certified CCS develop and implement the City's CCC program. *If Kelsey Jansen and Mr. Fessler are to retain their roles within the cross connection control program they must obtain certification as a CCS.* The Cross Connection Control plan will be reviewed in the City's upcoming Water System Plan (WSP) update. The plan should be reviewed by a CCS to confirm it addresses the 10 mandatory elements of a plan before submitting it in the WSP. For technical assistance on cross connection control programs you may contact William Bernier in the DOH Headquarters unit at 360-236-3562 During the survey it became apparent that there is a lack of communication between the water system operators, who are the operators directly responsible for the water system, and City Hall. The operators are uncertain of the testing status of backflow assemblies in the distribution system and do not appear to be communicating cross connection control issues or concerns with City Hall. There was one High Hazard Table 9 connection that was observed during the survey (Knutson Farms) but the operators were either unaware of the need to require backflow prevention on this connection or felt that they were not responsible for requiring it. This appears to be a function of the communication issues between the operators and City Hall. Additionally, the City has been aware for at least five years of another potential Table 9 connection in the form of an unapproved water source on a connection served by the City's water system (Sunoco Products). The operators explained that there has been discussion and negotiation with the property owner to install a service meter and backflow prevention but were unable to explain why it was still unprotected after five years. Again, this appears to be a function of the communication issues between the operators and City Hall. *WAC 246-290-490 requires that the distribution system is protected from all Table 9 hazards through the use of an air gap or Reduced Pressure Backflow Assembly. The City must immediately address these unprotected Table 9 connections.* It is a concern that the operators are unclear on the policies and procedures of cross connection control administration. They are unclear on the policies for industrial and commercial connections which have grown significantly in the northern portions of the distribution system. They are the eyes and ears of what goes on in the distribution system yet they do not appear to communicate potential issues such as unprotected Table 9 hazards with City Hall. It also appears that City Hall does not communicate changes in occupancy or water usage by these industrial connections as they become known to City Hall. A clear line of communication and responsibilities must be established between field staff and City Hall. The lack of this communication has resulted in at least one Table 9 hazard going unaddressed for years. This is a significant source of liability for the City but there appears to be a lack of urgency in addressing these issues.

FACILITIES REVIEW

Action Items? N ☐ Y ☒

SD - ***At least one of the spring boxes (Crystal Springs, see photos) had an unscreened vent. All spring box vents must be protected with a fine mesh screen.***

All sources need raw water sample taps. The following sources did not appear to have a raw water sample tap: West Well and Dieringer Well.

The vent screens on all of the reservoirs were outfitted with wide mesh screens or grating. All reservoir vents need to be outfitted with fine mesh screen like 24 mesh screening. It is recommended that the City engineering staff evaluate the potential of fine mesh screening to freeze which could cause restrictions to air flow.

Ehli Spring – ***There is an unprotected surge pipe vent in the old reservoir building that must be screened (see photos). This is a direct path to water flowing into the storage tanks.***

Ob - Refer to the West Well discussion in the Treatment Section. There are existing deficiencies with the way the well is being operated.

Rec - It was reported that there was no low chlorine alarm for the springs' disinfection units. A low chlorine alarm should be established to warn operators of insufficient chlorine residuals.

It is recommended that the hatch drain at the Sumner Springs weir vault be screened.

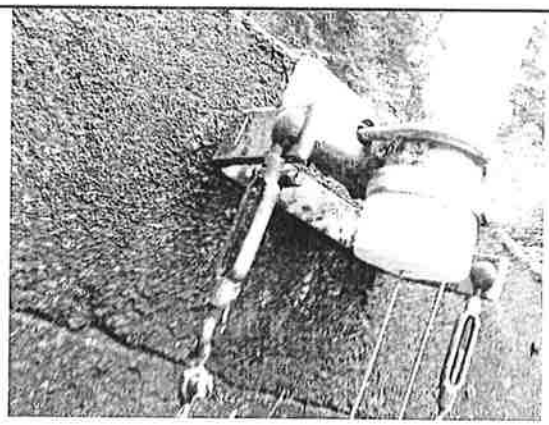
Category	Narrative with Findings, Observations, and Recommendations
Source	All of the springs and wells appeared to be in very good to good condition. All of the sources were metered, had screened vents, and raw water sample taps except as noted below. The wells were protected with check valves. It is recommended that the hatch drain at the Sumner Springs weir vault be screened. **Significant Deficiencies** ***At least one of the spring boxes (Crystal Springs, see photos) had an unscreened vent. All spring box vents must be protected with a fine mesh screen.*** ***All sources need raw water sample taps. The following sources did not appear to have a raw water sample tap: West Well and Dieringer Well.*** **Ehli Spring** – ***There is an unprotected surge pipe vent in the old reservoir building that must be screened (see photos). This is a direct path to water flowing into the storage tanks.***
SCA	The Sanitary Control Areas (SCAs) of the springs appeared to be adequate and mostly adequate for the West and South Wells. The SCA for the Dieringer well is heavily impacted by parking lots and buildings. However, there appears to be minimum impacts since the well is under artesian pressure.

Storage	The reservoirs appeared to be in very good to good condition. None of the reservoirs were climbed during the survey. Photos of the reservoir hatch seals and vent screens were provided by the operators. Reservoir roofs are accessed annually at a minimum and often more frequently than annually. The following are deficiencies that need to be addressed. **Significant Deficiencies** **All reservoirs** – ***The vent screens on all of the reservoirs were outfitted with wide mesh screens or grating. All reservoir vents need to be outfitted with fine mesh screen like 24 mesh screening.*** It is recommended that the City engineering staff evaluate the potential of fine mesh screening to freeze which could cause restrictions to air flow.
Distribution	The distribution system was reported to be in acceptable condition. The WSP update documents the age and composition of the distribution system as well as any needed improvements.
Pumping	There is one booster pump station (BPS) that pumps water from the main pressure zone to the upper (Sumner Viewpoint) pressure zone. The BPS consists of one 7 HP pump and one 40 HP pump for fire flow to the upper pressure zone. The BPS was in very good condition. There is a connection available for a portable generator if needed for a lengthy power outage. The current WSP update indicated that there was adequate pumping capacity for the booster station.
Treatment	The water system practices chlorine disinfection at all of their sources. Gas chlorine is used at the spring sources and sodium hypochlorite is used at the well sources. A minimum CT of 6 is required from the spring sources due to their hydraulic connection with surface water. The water system typically maintains a chlorine residual of 0.5 mg/L in the distribution system. **Spring Disinfection** The County and Crystal Springs system requires a minimum free chlorine residual of 0.45 mg/L into the distribution system to achieve a minimum CT of 6. At the time of the survey the chlorine residual into distribution was 0.53 mg/L. This was measured by a continuous read chlorine analyzer which is monitored by the City's SCADA system. The Sumner Springs system requires a minimum free chlorine residual of less than 0.2 mg/L to achieve a CT of 6. At the time of the survey the free chlorine residual was 0.49 mg/L. There is a SCADA monitored chlorine analyzer located at the springs after the reservoir prior to entry into the distribution system. It was reported that there was no low chlorine alarm. A low chlorine alarm should be established to warn operators of insufficient chlorine residuals. Elhi Springs currently requires a 2.2 mg/L residual to maintain a CT of 6. This is due to a restaurant connection across WA Hwy 410 from the springs. It was reported that any piping reconfigurations in the area for service relocation or additional contact piping would be difficult to install due to the ground conditions around the springs. It is likely that piping changes would need to be made by hand. The springs were not in use at the time of the survey and they had not been used for at least two years. *West Well* The chlorination disinfection equipment had been removed from the West Well (S05). It was explained that City employees who work around the cemetery often turn the well on for irrigation purposes only. Most of the distribution system is apparently isolated from the West Well. However, there are at least two connections where water is accessible, the cemetery offices and a maintenance garage near the well. It is apparent that there is no communication with the water system operators regarding the use of this well. *Water system certified operators must have oversight of any work done on the water system.* This could include direct operation by the operators or developing a clear plan of communication and

	supervision between the operators and the cemetery workers. *Additionally, if the well is to be operated as an unchlorinated source a monthly coliform sample must be collected from the zone that is being fed by the untreated West Well.* Alternatively, the chlorination treatment facilities can be reinstalled and the well would operate as a disinfected source.
Reliability	There are multiple sources, and the main sources (springs) supply the distribution system via gravity flow. In addition there are 5 million gallons of gravity storage. There is a generator located at the Sumner Springs that can run the chlorination facilities during power outages. There appears to be adequate reliability.

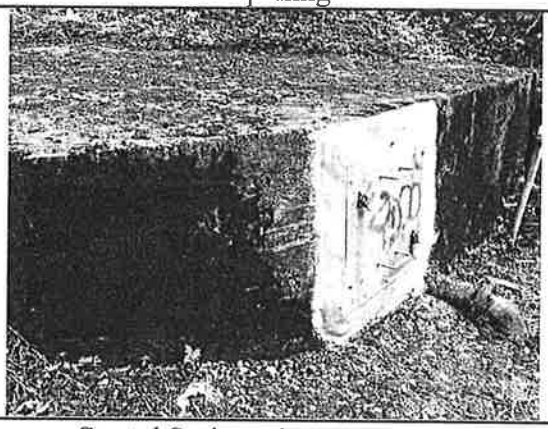
PHOTOGRAPHS

County Springs Reservoir



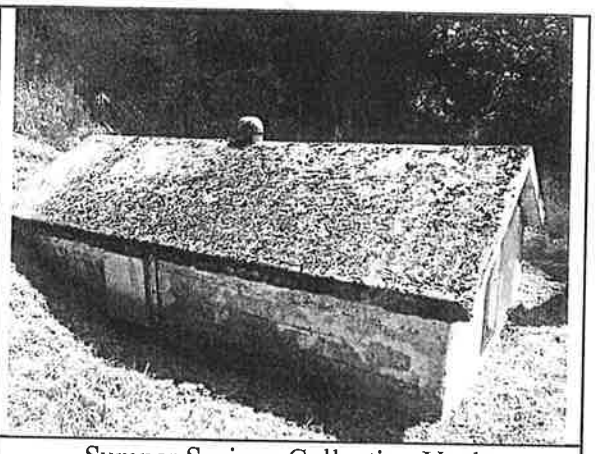
County Springs Reservoir Float Gauge Opening

County Springs Weir Vault



Crystal Springs Collection Vault

Crystal Springs Collection Box Vent



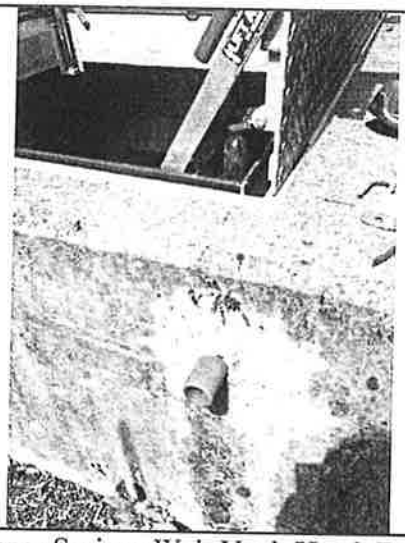
Sumner Springs Collection Vault

Sumner Springs Collection Vault Overflow

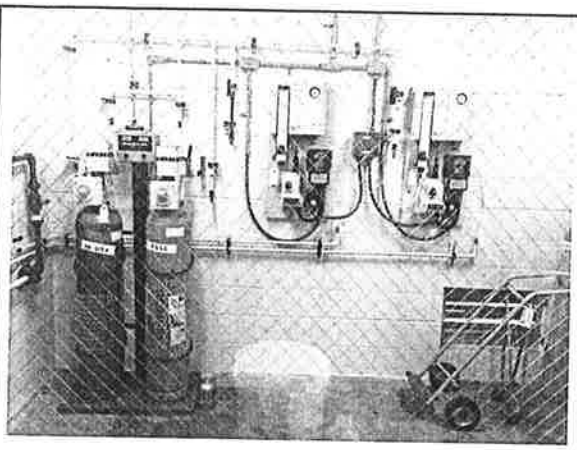
Sumner Springs Collection Box

Sumner Springs Weir Vault

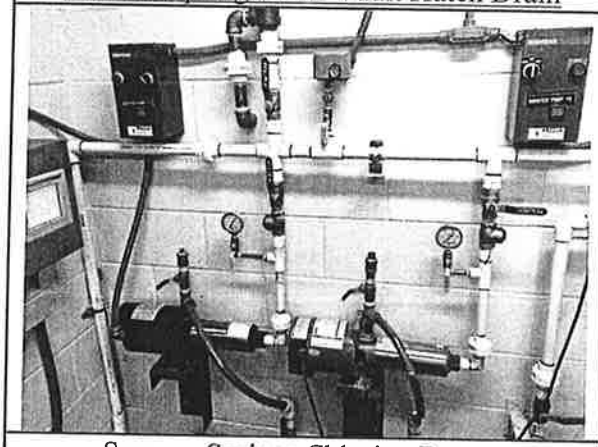
Sumner Springs Weir and Overflow



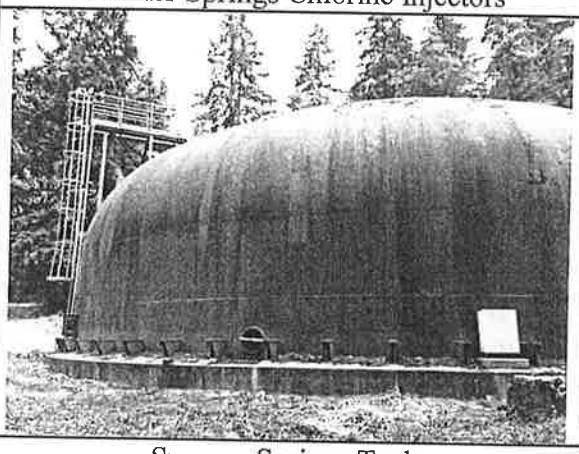
Sumner Springs Weir Vault Hatch Drain



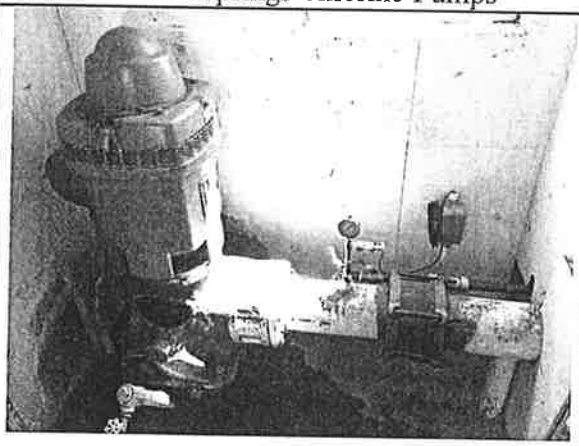
Sumner Springs Chlorine Injectors



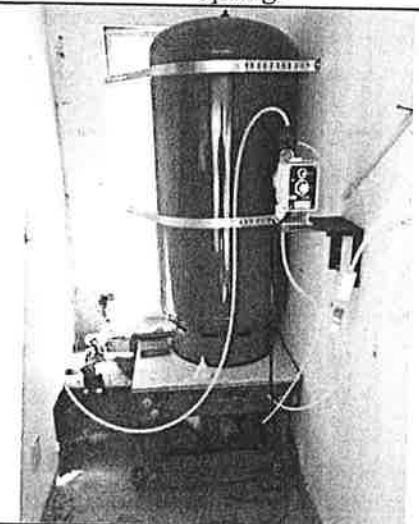
Sumner Springs Chlorine Pumps



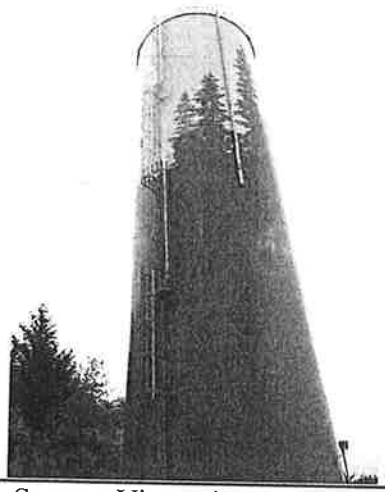
Sumner Springs Tank



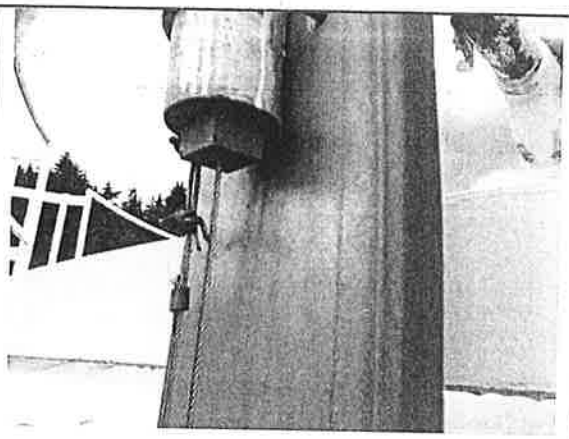
West Well



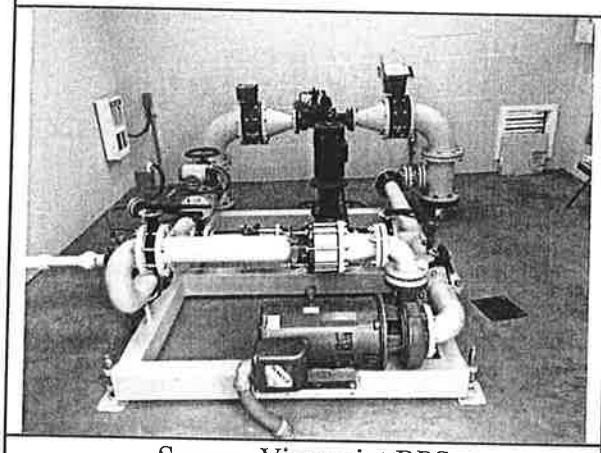
West Well Chlorine Hook Up Facilities



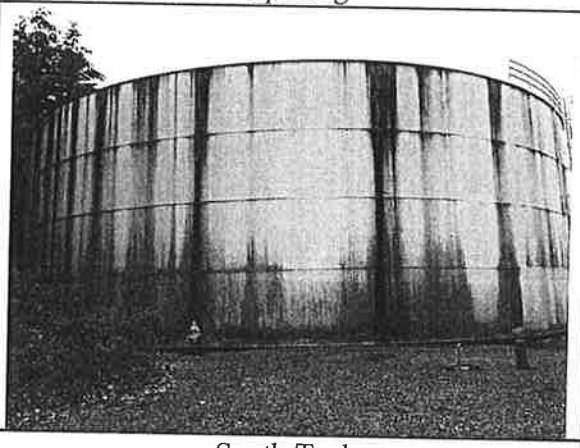
Sumner Viewpoint Reservoir



Sumner Viewpoint Reservoir Float Gauge Opening

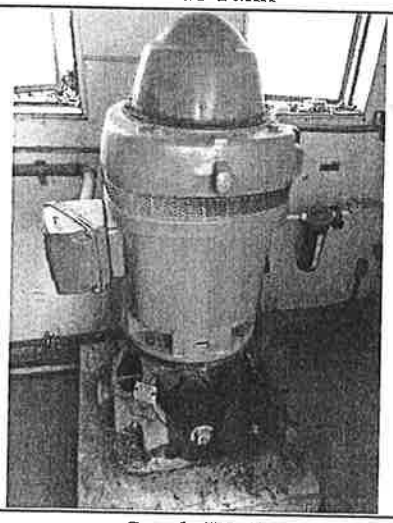


Sumner Viewpoint BPS



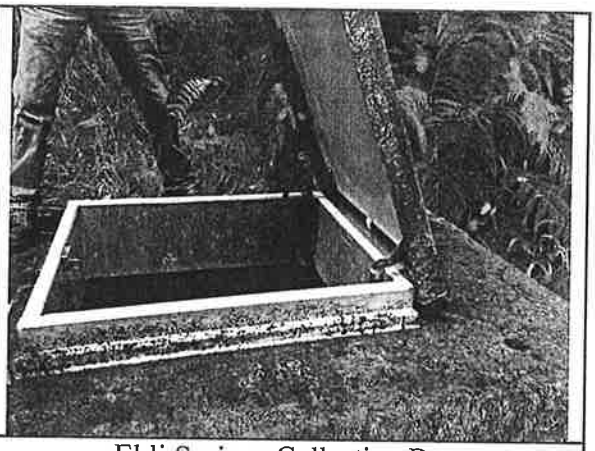
South Tank

Sumner Viewpoint and South Tank Overflows

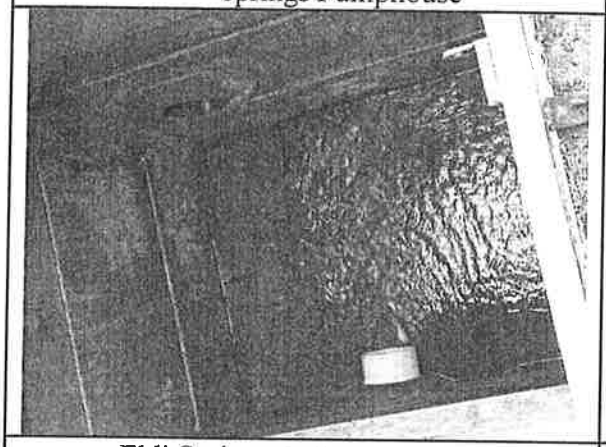


South Well

Ehli Springs Pumphouse

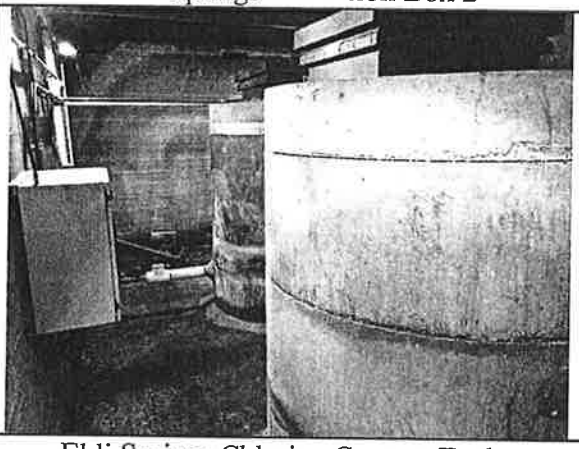


Ehli Springs Collection Box

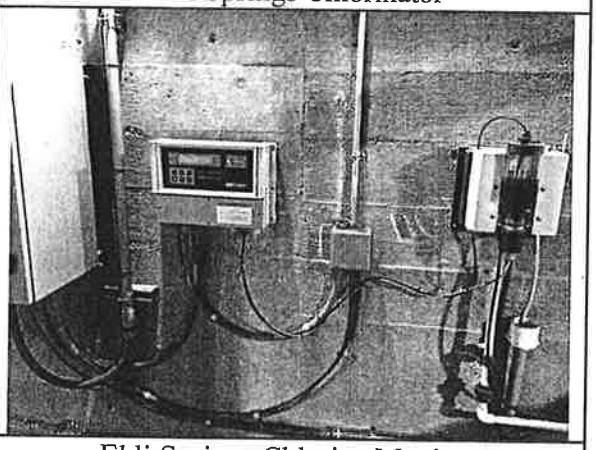


Ehli Springs Collection Box 2

Ehli Springs Chlorinator

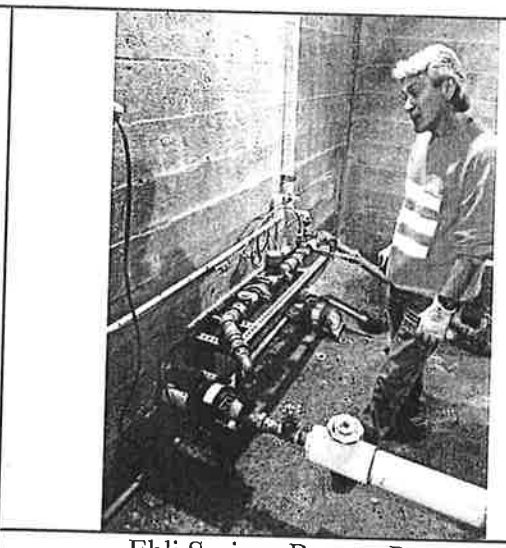


Ehli Springs Chlorine Contact Tanks

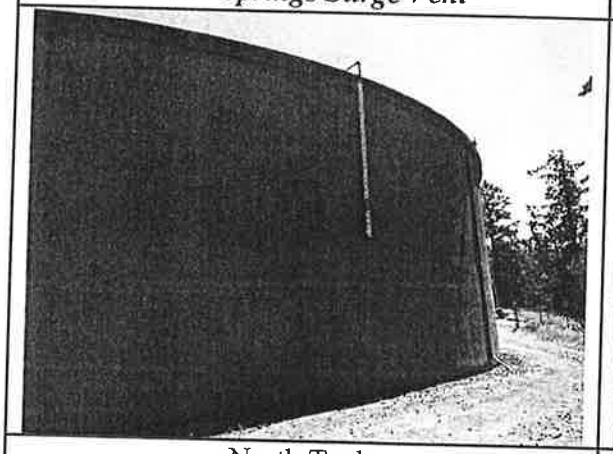


Ehli Springs Chlorine Monitor

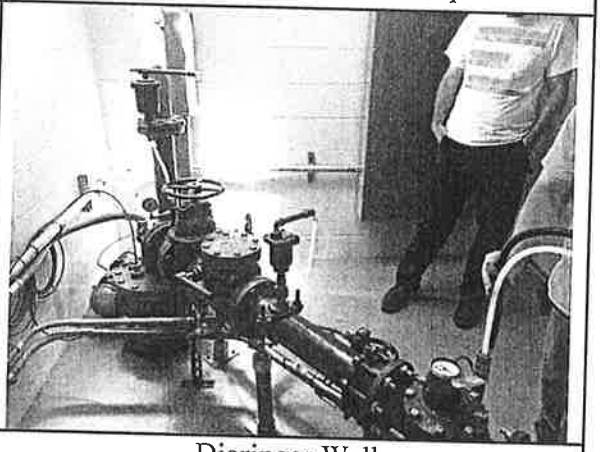
Ehli Springs Surge Vent



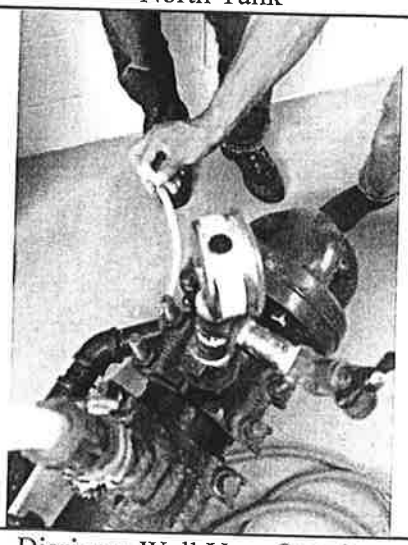
Ehli Springs Booster Pump



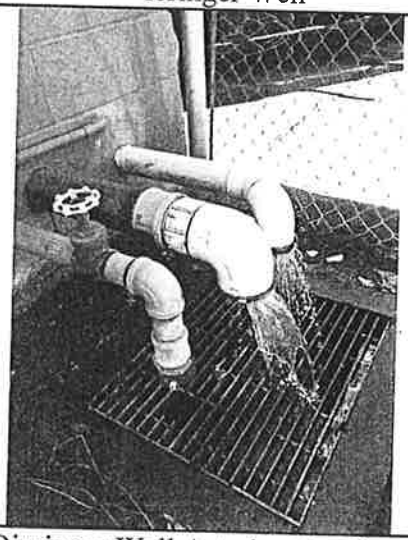
North Tank



Dieringer Well

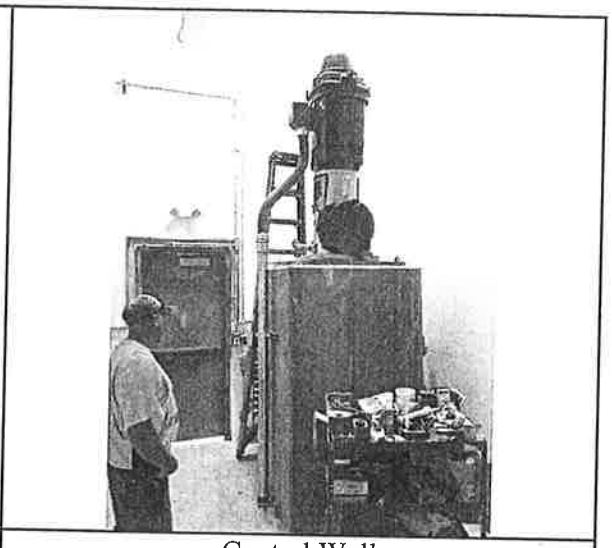


Dieringer Well Vent Opening

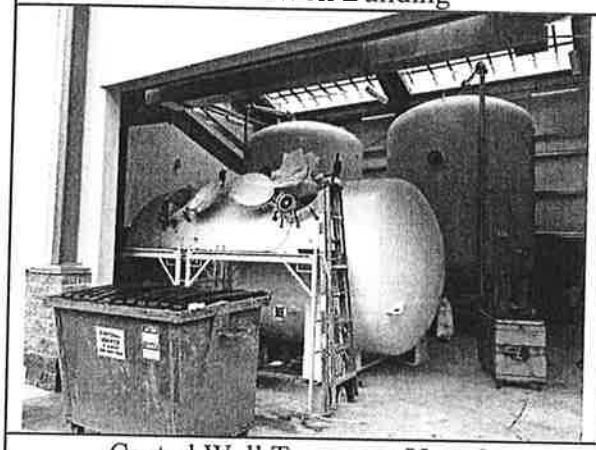


Dieringer Well Artesian Overflow

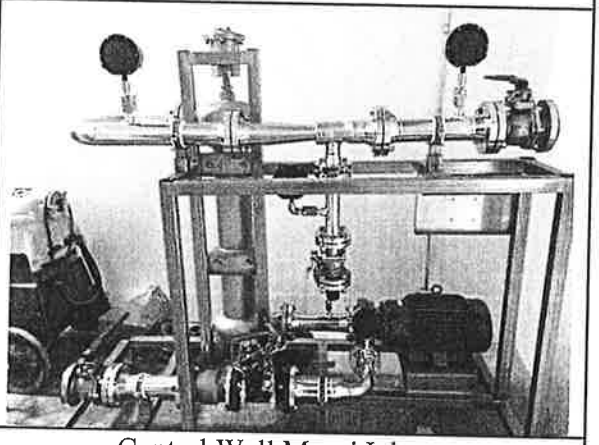
Central Well Building



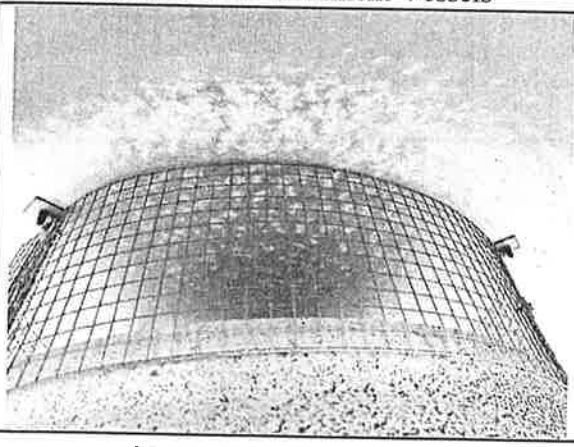
Central Well



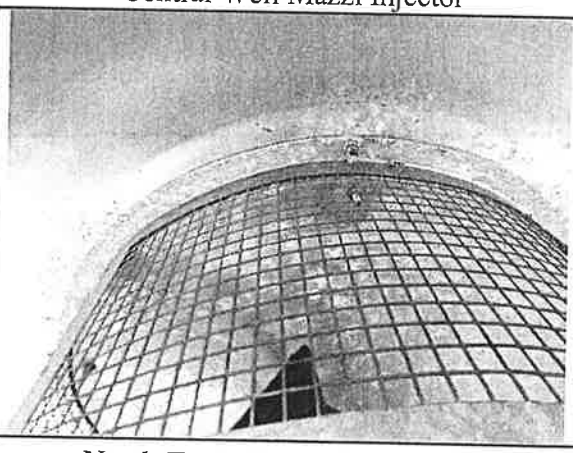
Central Well Treatment Vessels



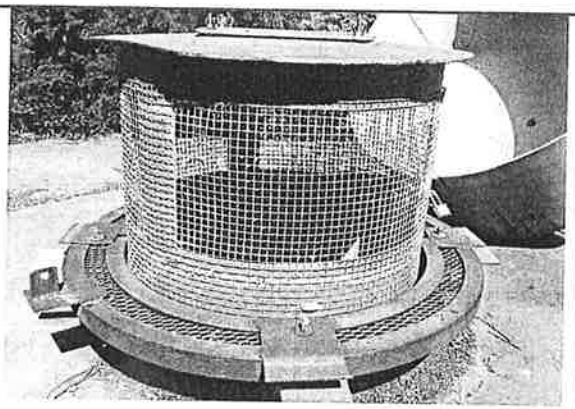
Central Well Mazzi Injector



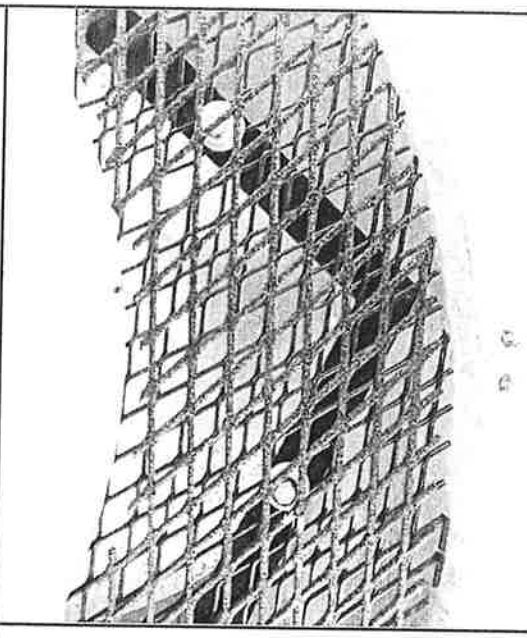
North Tank Vent Screen



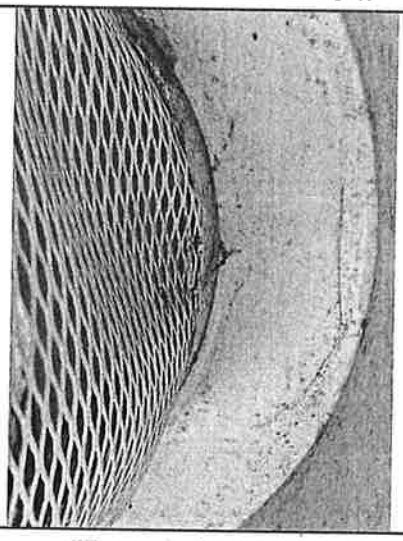
North Tank Blower Vent Screen



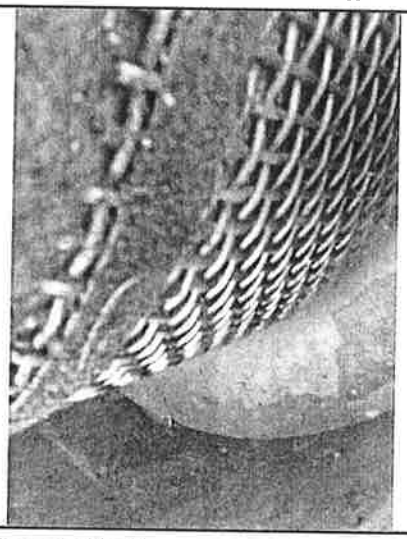
Sumner Tank Vent Screen



South Tank Vent Screen



Sumner Viewpoint Tank Vent Screen



County Springs Tank Vent Screen

Appendix I

CIP Project OPCCs

City of Sumner WSP Update
Planning Level Opinion of Probable Project Costs
S2 - Central Well Treatment Capacity Expansion
Prepared By: P. Love
Reviewed By: C. Kelsey
December 2017 - ENR CCI Index 11,443 (Seattle)

Bid Item No.	Bid Item Description	Unit Bid Price	Quantity	Unit	Total
1	Mobilization / Demobilization	$101,500	1	LS	$101,500
2	General Restoration	$20,300	1	LS	$20,300
3	Start up & Test	$25,380	1	LS	$25,380
4	Contact Pipeline	$250,000	1	LS	$250,000
5	Building Extension	$75,000	1	LS	$75,000
6	Well Pump and Motor	$50,000	1	LS	$50,000
7	Treatment Upgrades	$650,000	1	LS	$650,000
8	Telemetry and Controls	$40,000	1	LS	$40,000
9	Electrical Upgrades	$200,000	1	LS	$200,000
	Subtotal				$1,413,000
	Sales Tax	9.3%			$132,000
	OPINION OF PROBABLE CONSTRUCTION COST				$1,545,000
	Construction Contingency	35%			$540,750
	TOTAL OPINION OF PROBABLE CONSTRUCTION COST				$2,086,000
	Planning	5%			$78,000
	Design and Permitting	15%			$232,000
	Services During Construction	15%			$232,000
	TOTAL OPINION OF PROBABLE ALLIED COST				$542,000
	TOTAL OPINION OF PROBABLE PROJECT COST				$2,630,000

Notes and Assumptions

1. Mobilization is assumed to be 10% of Construction
2. Erosion Control, Traffic Control, and Cleanup/Restoration at 2% Construction Costs
3. Startup & Test at 2.5% of Construction Costs
4. Costs are in 2017 dollars

The opinion of probable cost herein is based on our perception of current conditions at the project location. This opinion reflects our professional opinion of costs at this time and is subject to change as the project design progresses. BHC Consultants has no control over variances in the cost of labor, materials, equipment; nor services provided by others, contractor's means and methods of executing the work or of determining prices, competitive bidding or market conditions, practices or bidding strategies. BHC Consultants cannot and does not warrant or guarantee that proposals, bids, or actual construction costs will not vary from the costs presented as shown.

City of Sumner WSP Update
Planning Level Opinion of Probable Project Costs
S3 - South Well Improvements
Prepared By: P. Love
Reviewed By: C. Kelsey
December 2017 - ENR CCI Index 11,443 (Seattle)

Bid Item No.	Bid Item Description	Unit Bid Price	Quantity	Unit	Total
1	Mobilization / Demobilization	$35,000	1	LS	$35,000
2	Temporary Erosion & Sediment Control	$7,000	1	LS	$7,000
3	Traffic Control	$7,000	1	LS	$7,000
4	General Restoration	$7,000	1	LS	$7,000
5	Start up & Test	$8,750	1	LS	$8,750
6	Demolition of Existing Building and Metering Vault	$10,000	1	LS	$10,000
7	Temprary Bypass Pumping	$25,000	1	LS	$25,000
8	New Well Building	$125,000	1	LS	$125,000
9	New Metering Vault	$40,000	1	LS	$40,000
10	Electrical Upgrades	$150,000	1	LS	$150,000
	Subtotal				$415,000
	Sales Tax	9.3%			$39,000
	OPINION OF PROBABLE CONSTRUCTION COST				$454,000
	Construction Contingency	35%			$158,900
	TOTAL OPINION OF PROBABLE CONSTRUCTION COST				$613,000
	Planning	5%			$23,000
	Design and Permitting	15%			$69,000
	Services During Construction	15%			$69,000
	TOTAL OPINION OF PROBABLE ALLIED COST				$161,000
	TOTAL OPINION OF PROBABLE PROJECT COST				$770,000

Notes and Assumptions

1. Mobilization is assumed to be 10% of Construction
2. Erosion Control, Traffic Control, and Cleanup/Restoration at 2% Construction Costs
3. Startup & Test at 2.5% of Construction Costs
4. Costs are in 2017 dollars

The opinion of probable cost herein is based on our perception of current conditions at the project location. This opinion reflects our professional opinion of costs at this time and is subject to change as the project design progresses. BHC Consultants has no control over variances in the cost of labor, materials, equipment; nor services provided by others, contractor's means and methods of executing the work or of determining prices, competitive bidding or market conditions, practices or bidding strategies. BHC Consultants cannot and does not warrant or guarantee that proposals, bids, or actual construction costs will not vary from the costs presented as shown.

City of Sumner WSP Update
Planning Level Opinion of Probable Project Costs
S4 - Dieringer Well Improvements
Prepared By: P. Love
Reviewed By: C. Kelsey
December 2017 - ENR CCI Index 11,443 (Seattle)

Bid Item No.	Bid Item Description	Unit Bid Price	Quantity	Unit	Total
1	Mobilization / Demobilization	$4,500	1	LS	$4,500
2	Temporary Erosion & Sediment Control	$900	1	LS	$900
3	General Restoration	$900	1	LS	$900
4	Start up & Test	$1,130	1	LS	$1,130
5	Install Ball Check Valve	$5,000	1	LS	$5,000
6	Existing Well Building Modifications	$15,000	1	LS	$15,000
7	Electrical Upgrades	$25,000	1	LS	$25,000
	Subtotal				$53,000
	Sales Tax	9.3%			$5,000
	OPINION OF PROBABLE CONSTRUCTION COST				$58,000
	Construction Contingency	35%			$20,300
	TOTAL OPINION OF PROBABLE CONSTRUCTION COST				$79,000
	Planning	5%			$3,000
	Design and Permitting	15%			$9,000
	Services During Construction	15%			$9,000
	TOTAL OPINION OF PROBABLE ALLIED COST				$21,000
	TOTAL OPINION OF PROBABLE PROJECT COST				$100,000

Notes and Assumptions

1. Mobilization is assumed to be 10% of Construction
2. Erosion Control, Traffic Control, and Cleanup/Restoration at 2% Construction Costs
3. Startup & Test at 2.5% of Construction Costs
4. Costs are in 2017 dollars

The opinion of probable cost herein is based on our perception of current conditions at the project location. This opinion reflects our professional opinion of costs at this time and is subject to change as the project design progresses. BHC Consultants has no control over variances in the cost of labor, materials, equipment; nor services provided by others, contractor's means and methods of executing the work or of determining prices, competitive bidding or market conditions, practices or bidding strategies. BHC Consultants cannot and does not warrant or guarantee that proposals, bids, or actual construction costs will not vary from the costs presented as shown.

City of Sumner
Planning Level Opinion of Probable Project Costs
S5 - West Well Improvements
Prepared by: P. Love
Reviewed by: C. Kelsey
November 2, 2017

Bid Item No.	Bid Item Description	Unit Bid Price	Quantity	Unit	Total
1	Mobilization / Demobilization	$500	1	LS	$500
2	Temporary Erosion & Sediment Control	$0	1	LS	$0
3	Traffic Control	$0	1	LS	$0
4	General Restoration	$0	1	LS	$0
5	New 6" Ductile Iron Pipe and Fittings	$5,000	1	LS	$5,000
6	Flushing and Water Quality Testing	$1,500	1	LS	$1,500
	Subtotal				$7,000
	Sales Tax	9.3%			$1,000
	OPINION OF PROBABLE CONSTRUCTION COST				$8,000
	Construction Contingency	35%			$2,800
	TOTAL OPINION OF PROBABLE CONSTRUCTION COST				$11,000
	Planning	5%			$1,000
	Design and Permitting	15%			$2,000
	Services During Construction	15%			$2,000
	TOTAL OPINION OF PROBABLE ALLIED COST				$5,000
	TOTAL OPINION OF PROBABLE PROJECT COST				$16,000

Notes
1. Startup & Test at 2.5% of Construction Costs
2. Costs are in 2017 dollars

City of Sumner WSP Update
Planning Level Opinion of Probable Project Costs
S6 - Sumner Springs Improvements
Prepared By: P. Love
Reviewed By: C. Kelsey
December 2017 - ENR CCI Index 11,443 (Seattle)

Bid Item No.	Bid Item Description	Unit Bid Price	Quantity	Unit	Total
1	Mobilization / Demobilization	$2,630	1	LS	$2,630
2	General Restoration	$530	1	LS	$530
3	Install Gooseneck Vent	$1,500	1	LS	$1,500
4	Install Chain Link Fence	$8	3500	LF	$26,250
	Subtotal				$31,000
	Sales Tax	9.3%			$3,000
	OPINION OF PROBABLE CONSTRUCTION COST				$34,000
	Construction Contingency	35%			$11,900
	TOTAL OPINION OF PROBABLE CONSTRUCTION COST				$46,000
	Planning	5%			$3,000
	Design and Permitting	15%			$7,000
	Services During Construction	15%			$7,000
	TOTAL OPINION OF PROBABLE ALLIED COST				$17,000
	TOTAL OPINION OF PROBABLE PROJECT COST				$63,000

Notes and Assumptions

1. Mobilization is assumed to be 10% of Construction
2. General Restoration at 2% Construction Costs
3. Costs are in 2017 dollars

The opinion of probable cost herein is based on our perception of current conditions at the project location. This opinion reflects our professional opinion of costs at this time and is subject to change as the project design progresses. BHC Consultants has no control over variances in the cost of labor, materials, equipment; nor services provided by others, contractor's means and methods of executing the work or of determining prices, competitive bidding or market conditions, practices or bidding strategies. BHC Consultants cannot and does not warrant or guarantee that proposals, bids, or actual construction costs will not vary from the costs presented as shown.

City of Sumner WSP Update
Planning Level Opinion of Probable Project Costs
S7 - County Springs Improvements
Prepared By: P. Love
Reviewed By: C. Kelsey
December 2017 - ENR CCI Index 11,443 (Seattle)

Bid Item No.	Bid Item Description	Unit Bid Price	Quantity	Unit	Total
1	Mobilization / Demobilization	$15,000	1	LS	$15,000
2	SPCC Plan	$1,000	1	LS	$1,000
3	General Restoration	$3,000	1	LS	$3,000
4	Startup and Testing	$3,750	1	LS	$3,750
5	Install Permanent Onsite Generator	$25,000	1	LS	$25,000
6	Replace Existing Gutters	$2,500	1	LS	$2,500
7	Cleaning and Recoating of Reservoir	$150,000	1	LS	$150,000
8	Electrical Upgrades	$50,000	1	LS	$50,000
	Subtotal				$251,000
	Sales Tax	9.3%			$24,000
	OPINION OF PROBABLE CONSTRUCTION COST				$275,000
	Construction Contingency	35%			$96,250
	TOTAL OPINION OF PROBABLE CONSTRUCTION COST				$372,000
	Planning	5%			$19,000
	Design and Permitting	15%			$56,000
	Services During Construction	15%			$56,000
	TOTAL OPINION OF PROBABLE ALLIED COST				$131,000
	TOTAL OPINION OF PROBABLE PROJECT COST				$500,000

Notes and Assumptions

1. Mobilization is assumed to be 10% of Construction
2. Restoration at 2% Construction Costs
3. Costs are in 2017 dollars

The opinion of probable cost herein is based on our perception of current conditions at the project location. This opinion reflects our professional opinion of costs at this time and is subject to change as the project design progresses. BHC Consultants has no control over variances in the cost of labor, materials, equipment; nor services provided by others, contractor's means and methods of executing the work or of determining prices, competitive bidding or market conditions, practices or bidding strategies. BHC Consultants cannot and does not warrant or guarantee that proposals, bids, or actual construction costs will not vary from the costs presented as shown.

City of Sumner WSP Update
Planning Level Opinion of Probable Project Costs
ST1 - Earthquake Control Valves and Foundation Improvements
Prepared By: P. Love
Reviewed By: C. Kelsey
December 2017 - ENR CCI Index 11,443 (Seattle)

Bid Item No.	Bid Item Description	Unit Bid Price	Quantity	Unit	Total
1	Mobilization / Demobilization	$104,000	1	LS	$104,000
2	Temporary Erosion & Sediment Control	$20,800	1	LS	$20,800
3	General Restoration	$20,800	1	LS	$20,800
4	Seismic Retrofit Installation	$750,000	1	LS	$750,000
5	Reservoir Recoating	$150,000	1	LS	$150,000
6	Install Seismic Isolation Valve	$70,000	2	LS	$140,000
	Subtotal				$1,186,000
	Sales Tax	9.3%			$111,000
	OPINION OF PROBABLE CONSTRUCTION COST				$1,297,000
	Construction Contingency	35%			$453,950
	TOTAL OPINION OF PROBABLE CONSTRUCTION COST				$1,751,000
	Planning	5%			$88,000
	Design and Permitting	15%			$263,000
	Services During Construction	15%			$263,000
	TOTAL OPINION OF PROBABLE ALLIED COST				$614,000
	TOTAL OPINION OF PROBABLE PROJECT COST				$2,400,000

Notes and Assumptions

1. Mobilization is assumed to be 10% of Construction
2. Erosion Control, Traffic Control, and Cleanup/Restoration at 2% Construction Costs
3. Costs are in 2017 dollars

The opinion of probable cost herein is based on our perception of current conditions at the project location. This opinion reflects our professional opinion of costs at this time and is subject to change as the project design progresses. BHC Consultants has no control over variances in the cost of labor, materials, equipment; nor services provided by others, contractor's means and methods of executing the work or of determining prices, competitive bidding or market conditions, practices or bidding strategies. BHC Consultants cannot and does not warrant or guarantee that proposals, bids, or actual construction costs will not vary from the costs presented as shown.

City of Sumner WSP Update
Planning Level Opinion of Probable Project Costs
ST2 - Viewpoint BPS Improvements
Prepared By: P. Love
Reviewed By: C. Kelsey
December 2017 - ENR CCI Index 11,443 (Seattle)

Bid Item No.	Bid Item Description	Unit Bid Price	Quantity	Unit	Total
1	Mobilization / Demobilization	$8,200	1	LS	$8,200
2	Temporary Erosion and Sediment Control	$1,640	1	LS	$1,640
3	General Restoration	$1,640	1	LS	$1,640
4	Start up & Test	$4,100	1	LS	$4,100
5	Spare Pump	$2,000	1	LS	$2,000
6	Electrical Upgrades	$80,000	1	LS	$80,000
	Subtotal				$98,000
	Sales Tax	9.3%			$10,000
	OPINION OF PROBABLE CONSTRUCTION COST				$108,000
	Construction Contingency	35%			$37,800
	TOTAL OPINION OF PROBABLE CONSTRUCTION COST				$146,000
	Planning	5%			$8,000
	Design and Permitting	15%			$22,000
	Services During Construction	15%			$22,000
	TOTAL OPINION OF PROBABLE ALLIED COST				$52,000
	TOTAL OPINION OF PROBABLE PROJECT COST				$200,000

Notes and Assumptions

1. Mobilization is assumed to be 10% of Construction
2. Cleanup/Restoration assumed to be 2% of Construction Costs
3. Startup & Test at 5% of Construction Costs
4. Costs are in 2017 dollars

The opinion of probable cost herein is based on our perception of current conditions at the project location. This opinion reflects our professional opinion of costs at this time and is subject to change as the project design progresses. BHC Consultants has no control over variances in the cost of labor, materials, equipment; nor services provided by others, contractor's means and methods of executing the work or of determining prices, competitive bidding or market conditions, practices or bidding strategies. BHC Consultants cannot and does not warrant or guarantee that proposals, bids, or actual construction costs will not vary from the costs presented as shown.

City of Sumner WSP Update
Planning Level Opinion of Probable Project Costs
ST3 - North Tank Improvements
Prepared By: P. Love
Reviewed By: C. Kelsey
December 2017 - ENR CCI Index 11,443 (Seattle)

Bid Item No.	Bid Item Description	Unit Bid Price	Quantity	Unit	Total
1	Mobilization / Demobilization	$16,850	1	LS	$16,850
2	General Restoration	$3,370	1	LS	$3,370
3	Start up & Test	$8,430	1	LS	$8,430
4	Furnish and Install Interior Ladder	$2,000	1	LS	$2,000
5	Reservoir Mixing System	$85,000	1	LS	$85,000
6	Emergency Generator and Enclosure	$80,000	1	LS	$80,000
7	Recalibrate Existing Cla-Val Valve	$1,500	1	LS	$1,500
	Subtotal				$198,000
	Sales Tax	9.3%			$19,000
	OPINION OF PROBABLE CONSTRUCTION COST				$217,000
	Construction Contingency	35%			$75,950
	TOTAL OPINION OF PROBABLE CONSTRUCTION COST				$293,000
	Planning	5%			$15,000
	Design and Permitting	15%			$44,000
	Services During Construction	15%			$44,000
	TOTAL OPINION OF PROBABLE ALLIED COST				$103,000
	TOTAL OPINION OF PROBABLE PROJECT COST				$400,000

Notes and Assumptions

1. Mobilization is assumed to be 10% of Construction
2. Cleanup/Restoration assumed to be 2% of Construction Costs
3. Startup & Test at 5% of Construction Costs
4. Costs are in 2017 dollars

The opinion of probable cost herein is based on our perception of current conditions at the project location. This opinion reflects our professional opinion of costs at this time and is subject to change as the project design progresses. BHC Consultants has no control over variances in the cost of labor, materials, equipment; nor services provided by others, contractor's means and methods of executing the work or of determining prices, competitive bidding or market conditions, practices or bidding strategies. BHC Consultants cannot and does not warrant or guarantee that proposals, bids, or actual construction costs will not vary from the costs presented as shown.

City of Sumner WSP Update
Planning Level Opinion of Probable Project Costs
ST4 - Viewpoint Tank Detention Pond
Prepared By: P. Love
Reviewed By: C. Kelsey
December 2017 - ENR CCI Index 11,443 (Seattle)

Bid Item No.	Bid Item Description	Unit Bid Price	Quantity	Unit	Total
1	Mobilization / Demobilization	$23,500	1	LS	$23,500
2	Temporary Erosion & Sediment Control	$4,700	1	LS	$4,700
3	General Restoration	$4,700	1	LS	$4,700
4	Start up & Test	$5,880	1	LS	$5,880
5	Install Detention Pond	$150,000	1	LS	$150,000
6	Install Seismic Isolation Valve	$70,000	1	LS	$85,000
	Subtotal				$274,000
	Sales Tax	9.3%			$26,000
	OPINION OF PROBABLE CONSTRUCTION COST				$300,000
	Construction Contingency	35%			$105,000
	TOTAL OPINION OF PROBABLE CONSTRUCTION COST				$405,000
	Planning	5%			$21,000
	Design and Permitting	15%			$61,000
	Services During Construction	15%			$61,000
	TOTAL OPINION OF PROBABLE ALLIED COST				$143,000
	TOTAL OPINION OF PROBABLE PROJECT COST				$550,000

Notes and Assumptions

1. Mobilization is assumed to be 10% of Construction
2. Erosion Control, Traffic Control, and Cleanup/Restoration at 2% Construction Costs
3. Startup & Test at 2.5% of Construction Costs
4. Costs are in 2017 dollars

The opinion of probable cost herein is based on our perception of current conditions at the project location. This opinion reflects our professional opinion of costs at this time and is subject to change as the project design progresses. BHC Consultants has no control over variances in the cost of labor, materials, equipment; nor services provided by others, contractor's means and methods of executing the work or of determining prices, competitive bidding or market conditions, practices or bidding strategies. BHC Consultants cannot and does not warrant or guarantee that proposals, bids, or actual construction costs will not vary from the costs presented as shown.

City of Sumner WSP Update
Planning Level Opinion of Probable Project Costs
ST5 - Springs Tank Improvements
Prepared By: P. Love
Reviewed By: C. Kelsey
December 2017 - ENR CCI Index 11,443 (Seattle)

Bid Item No.	Bid Item Description	Unit Bid Price	Quantity	Unit	Total
1	Mobilization / Demobilization	$15,000	1	LS	$15,000
2	General Restoration	$3,000	1	LS	$3,000
3	Reservoir Recoating	$150,000	1	LS	$150,000
	Subtotal				$168,000
	Sales Tax	9.3%			$16,000
	OPINION OF PROBABLE CONSTRUCTION COST				$184,000
	Construction Contingency	35%			$64,400
	TOTAL OPINION OF PROBABLE CONSTRUCTION COST				$249,000
	Planning	5%			$13,000
	Design and Permitting	15%			$38,000
	Services During Construction	15%			$38,000
	TOTAL OPINION OF PROBABLE ALLIED COST				$89,000
	TOTAL OPINION OF PROBABLE PROJECT COST				$340,000

Notes and Assumptions

1. Mobilization is assumed to be 10% of Construction
2. Erosion Control, Traffic Control, and Cleanup/Restoration at 2% Construction Costs
3. Costs are in 2017 dollars

The opinion of probable cost herein is based on our perception of current conditions at the project location. This opinion reflects our professional opinion of costs at this time and is subject to change as the project design progresses. BHC Consultants has no control over variances in the cost of labor, materials, equipment; nor services provided by others, contractor's means and methods of executing the work or of determining prices, competitive bidding or market conditions, practices or bidding strategies. BHC Consultants cannot and does not warrant or guarantee that proposals, bids, or actual construction costs will not vary from the costs presented as shown.