

Water Quality & Use Efficiency Report



System Summary

Welcome to the 2016 Water Quality and Use Efficiency Report. This report is designed to inform you about the water and services we deliver to you every day. Our goal is to provide you with a safe and dependable supply of drinking water. To comply with State and Federal water quality laws, over 15 water quality tests were performed for your system this year.

Our water source is the Harstene Retreat Well which is located along Fox Lane and draws water from an aquifer 315' deep. The reservoir and booster station are located off North Island Drive. All service connections and the source

are metered. The system is approved for 48 connections and there are currently 28 connections. The reservoir was inspected and cleaned in 2012 and 2013; nothing abnormal was found with the tank.

A Water System Plan is available from our office that provides more information about the Harstene Retreat Water System. Our well has been rated by the Washington State Department of Health as moderate for risk or susceptibility to contamination. More information regarding this rating can be obtained by contacting PUD No. 1.

If you have any questions regarding this report, the water or PUD No. 1

please contact Darin Hall, Director of Operations at 360-877-5249 or darinh@mason-pud1.org.

PUD 1 board meetings are the



Harstene Retreat Booster Station and Reservoir

2nd and 4th Tuesdays of each month at our office in Potlatch (1 mile south of Hoodspport, WA) at 1 pm. The public is welcome to our meetings.

The State Dept. of Health has Source Water Assessment Program (SWAP) data available online at <https://fortress.wa.gov/doh/eh/dw/swap/maps/> which lists potential contamination for each Group A water source in the state. This is an interactive map.

Inside This Issue

Water Quality Definitions	2
Summary Table of Test Results	3
Reason for Reporting Contaminants	3
Health Effects of Contaminants	4
State Waivers	4
Unregulated Contaminants Statement	5
Secondary Contaminants Statement	5
Lead Statement	5
Tap Water and Bottled Water Safety	5
How to Clear Chlorine from Tap Water	5
What You Should Know About Water Quality	6
Importance of Fixing Leaks	7
Water Use Efficiency Definitions	7
How to Check Your Meter For Leaks	7
Water Use Efficiency	8

Special points of interest:

- System Summary
- Water Quality Results
- Water Usage & Efficiency
- Water Usage Goals

In the water quality table you will find many terms and abbreviations you might not be familiar with. To help you better understand these terms, we have provided the following definitions:

Water Quality Definitions

Action Level (AL) - The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

Lead and Copper 90th Percentile - out of every 10 homes sampled, 9 were at or below this level.

Maximum Contaminant Level (MCL) - the highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Maximum Contaminant Level Goal (MCLG) - the level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

Maximum Residual Disinfectant Level (MRDL) - the highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Maximum Residual Disinfectant Level Goal (MRDLG) - the level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

N/A- not applicable.

Nephelometric Turbidity Unit (NTU) - a measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

Non-Detects (ND) - Laboratory analysis indicates that the contaminant is not present or not detected.

Parts per Billion (ppb) or micrograms per Liter (µg/L) - one part per billion.

Parts per Million (ppm) or Milligrams per Liter (mg/L) - one part per million corresponds to one minute in two years or a single penny in \$10,000.

Secondary Maximum Contaminant Level (SMCL) - these standards are developed to protect the aesthetic qualities of drinking water and are not health based.

State Reporting Level (SRL) - the level of contamination in which laboratory must report to the state.

Treatment Technique (TT) - a required process intended to reduce the level of a contaminant in drinking water.

< - Means 'less than'.



**Harstene Retreat Well House
Top—Before Rebuild
Bottom—After Rebuild**



Test Results Summary - Harstene Retreat Water System PWSID #31572M						
Contaminant	Violation Yes/No	Level Detected (range)	Unit Measurement	MCLG	MCL	Typical Source
Microbiological Contaminants						
Total Coliform Bacteria	NO	ND	Present or Absent	0	One Positive monthly sample	Naturally present in the environment
Fecal Coliform and <i>E.coli</i>	NO	ND	Present or Absent	0	One Positive monthly sample	Human and animal fecal waste
Inorganic Contaminants						
Nitrate (as Nitrogen) Well (02/19/2016)	NO	<0.2	ppm	10	10	Runoff from fertilizer use; leaching from septic tanks; erosion of natural deposits
Copper (06/14/2016) Consumer Tap Samples (5)	NO	Max 0.06 (0.01—0.06) 90th %: 0.03	ppm	1.3	AL=1.3	Corrosion of household plumbing systems; erosion of natural deposits
Lead (06/14/2016) Consumer Tap Samples (5)	NO	Max 0.001 (<0.001—0.001) 90th %: <0.001	ppb	0	AL=15	Corrosion of household plumbing systems; erosion of natural deposits
Arsenic Well (10/22/2015)	NO	5	ppb	0	10	Erosion of natural deposits; runoff from orchards; runoff from glass & electronic production waste
Contaminant	Exceed Trigger Yes/No	Level Detected (range)	Unit Measurement	Trigger	MCL	Typical Source
Secondary Contaminants						
Manganese Well (10/22/2015)	NO	50	ppb	50	50	Secondary contaminant that causes odor and bad taste; naturally present
Chloride Well (10/22/2015)	NO	5.9	ppm	250	250	Secondary contaminant; salt water intrusion
Sodium Well (10/22/2015)	NO	4.7	ppm	N/A	N/A	Secondary contaminant that causes bad taste; naturally present

Reason for Reporting Contaminants

The contaminant results table provided lists the drinking water contaminants we detected that are applicable for the calendar year of this report. The presence of contaminants in the water does not necessarily indicate that the water poses a health risk. Unless otherwise noted, the data presented in the table is from testing done in the calendar year of the report. The EPA or the state requires us to monitor for certain contaminants less than once per year because the concentrations of these contaminants do not change.

Health Effects of Contaminants

Nitrates: As a precaution we always notify physicians and health care providers in the area if there is ever a higher than normal level of nitrates in the water supply. Infants below the age of six months who drink water containing nitrate in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and “blue baby” syndrome.

Total Coliform: Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, bacteria may be present. Total coliform was found in the system in January 2015. We flushed and chlorinated the system and in February the system tested clean. At no time were fecal coliform or *E. coli* detected in the water.

Arsenic: Some people who drink water containing arsenic in excess of the MCL over many years could experience skin damage or problems with their circulatory system, and may have an increased risk of getting cancer.

Copper: Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over many years could suffer liver or kidney damage. People with Wilson’s Disease should consult their personal doctor.

Lead: Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink water with excess lead over many years could develop kidney problems or high blood pressure.

Chloride: We monitor the levels of chloride in each well to ensure salt water is not infiltrating into the drinking water. Chlorides levels rise when a well begins to pump from an aquifer mixing with sea water. When chloride levels exceed 150 ppm, the District has to consider alternative water sources. The chloride levels for Harstene Retreat Water System are 2 ppm.

Manganese: Manganese is known to occur naturally in well water due to the type of rock a well may be drilled into. Concentrations above the national guidelines may contribute to problems with taste, odor, and color of the water coming out of your tap. The District monitors the levels of manganese in the well water. Manganese does not yet exceeds the MCL. We do flush the distribution system on a quarterly basis to keep the manganese sediment from building up.

State Waivers

Waivers mean no testing or modified testing frequency for a specified contaminant is required for a set period of time. Waivers are granted by the State based on susceptibility assessment of the source or automatically granted for state-wide waivers. Below indicates the waivers granted and the time period for which they are granted for the Harstene Retreat Well.

Inorganic Contaminants: 1 sample every 9 years; **Synthetic Organic Contaminants (herbicides):** 1 sample every 9 years; **Synthetic Organic Contaminants (pesticides):** no samples through December 2016; **Volatile Organic Contaminants:** 1 sample every 6 years; **Soil Fumigants:** no samples through December 2016; **Dioxin, Diquat, Endothal, Glyphosphate, Insecticides:** complete waivers; **Asbestos:** no samples through 2019.

Unregulated Contaminants Statement

Unregulated contaminants are those for which EPA has not established drinking water standards. The purpose of unregulated contaminant monitoring is to help EPA determine their occurrence in drinking water and potential need for future regulation.



Secondary Contaminants Statement

Secondary contaminant standards are developed to protect the aesthetic (taste, color and odor) qualities of drinking water and **are not health based**. Secondary contaminants include iron, manganese, silver, chloride, sodium, sulfate, and zinc. Exceeding the MCL for any of these secondary contaminants does not mean the water system is in violation of the state or federal standard. Iron causes orange/reddish staining, possible taste problems and sediment. Manganese may cause white laundry to turn grayish, cause water to turn black or brown, it may even cause taste or odor problems, and sediment. Sodium causes water to taste salty. Sulfate causes odor and taste problems. Chloride causes a salty taste. Zinc causes a metallic taste. Silver may cause skin discoloration which is harmless. Turbidity causes water discoloration and sediment.

Washington State Office of Drinking Water Lead Statement

In Washington State, lead in drinking water comes primarily from materials and components used in household plumbing and service lines. Mason PUD No. 1 is responsible for providing high quality water, but cannot control the variety of materials used in plumbing components. Elevated levels of lead can cause serious health problems, especially in pregnant women and young children.

To help reduce potential exposure to lead: for any drinking water tap that has not been used for 6 hours or more, flush water for thirty (30) seconds to two (2) minutes through the tap until the water is noticeably colder before using for drinking or cooking. You can use the flushed water for watering plants, washing dishes or general cleaning. Only use water from the cold-water tap for drinking, cooking, and especially for making baby formula. Hot water is likely to contain higher levels of lead. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water is available from EPA's Safe Drinking Water Hotline at 1-800-426-4791 or online at <http://www.epa.gov/safewater/lead>.

Tap Water and Bottled Water Safety

To ensure that tap water is safe to drink, the Washington State Board of Health and/or EPA prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) and the Washington Department of Agriculture regulations establish limits for contaminants in bottled water that must provide the same protection for public health.



How to Clear Chlorine from Tap Water

Occasionally we are required to chlorinate the distribution system. When that occurs and you prefer not to drink chlorinated water, fill a pitcher with tap water and leave it either on the counter or in the fridge over night. The chlorine will dissipate and you should not taste it in your drinking water from the pitcher. A filter on your faucet or in a pitcher may, also, be used to remove chlorine.

Contaminants That May Be Present In Source Water

- **Microbial contaminants**, such as viruses, parasites and bacteria, that may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife.
- **Inorganic contaminants**, such as salts and metals, which can occur naturally or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming.
- **Pesticides and herbicides**, which may come from a variety of sources, such as agriculture, urban stormwater runoff and residential uses.
- **Radioactive contaminants** which can occur naturally or result from oil and gas production and mining activities.
- **Organic chemical contaminants**, including synthetic and volatile chemicals, which are by-products of industrial processes and petroleum production. They can also come from gas stations, urban stormwater runoff and septic systems.



What You Should Know About Water Quality

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline (1-800-426-4791).

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some

elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline (1-800-426-4791).

Maximum Contaminant Levels (MCLs) are set at very stringent levels. To understand the possible health effects described for many regulated contaminants, a person would have to drink 2 liters of water every day at the MCL

for a **lifetime** to have a **one-in-a-million** chance of having the described health effect.

The sources of drinking water (both tap and bottled) include rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or human activity.

Importance of Fixing Leaks

Even small leaks add up to a lot of water over time. The chart at right shows how much water flows through a leak the size of the circle indicated. A pinprick sized hole means 3,600 gallons a month or 43,200 gallons a year. When this water flows through your meter, you are paying for water you are not using and the District is paying to pump this water - extra wear on the pumps and the cost of electricity to run the pump. Help preserve your water system and repair leaks on your service lines. We monitor the distribution system for leaks by visual inspection and monitoring monthly distribution system leakage.

Water Loss In Gallons					
Leak this Size	Loss Per Day	Loss Per Month	Leak this Size	Loss Per Day	Loss Per Month
.	120	3,600	●	6,640	199,520
•	300	10,800	●	6,964	209,520
●	693	20,790	●	8,424	252,720
●	1,200	36,000	●	9,585	296,640
●	1,920	57,600	●	11,324	339,720
●	3,095	92,880	●	12,750	361,600
●	4,295	128,880	●	14,952	448,560

Table provided by Buffalo Water, www.buffalowater.org

Water Use Efficiency Definitions

Authorized Consumption (AC) — volume of water used by consumers as shown through meter readings, fire-fighting, system flushing, tank cleaning and street cleaning.

Average Daily Demand (ADD) — average volume of water a typical single family home uses each day.

Distribution System Leakage (DSL) — water lost from the system through leaking pipes, illegal water use, malfunctioning meters or meter reading errors. The volume difference of total water produced and authorized consumption (TP-AC).

Percent DSL = [(TP-AC)/TP] x 100%

Total Water Produced (TP) — volume of water pumped from a well, diverted from a surface water or purchased from another system.

Water Use Efficiency (WUE) Goal — a set target for water usage approved by the Board of Commissioners through the public process.

Water Use Efficiency Measure — actions set by the Board of Commissioners to reduce water loss and water demand approved through the public process.

How to Check Your Meter For Leaks

1. Locate your water meter. It is usually found in a small concrete or plastic box near the street.
2. If you need help locating your water meter, contact the P.U.D.
3. Turn off all water at the house and in the yard, including water-using appliances in the home.
4. Remember to shut off all indoor and outdoor faucets.
5. Check and record the current meter reading.
6. Wait at least 15 minutes before checking your meter again.
7. Remember, DO NOT use any water while you are waiting!
8. Read the water meter again. If the reading has changed, then you may have a leak that may require immediate attention.

Water Use Efficiency

Water use efficiency is a “proactive approach” to protect public health and water supplies. Droughts, climate change, growth demands and fewer granted water rights may lead to future long-term water disruptions due to declining water supplies. The District water use efficiency (WUE) program effectively plans and implements measures that can result in fewer water emergencies:

- Contributes to long-term water supply reliability and public health protection.
- Promotes good stewardship of the state’s water resources.
- Ensures efficient operation and management of our water systems.

The 2016 DSL for the Harstene

Retreat Water System is:

Total Water Produced (TP)
= 1,336,452 gallons

Authorized Consumption (AC)
= 1,189,353 gallons

DSL Volume = 147,099 gallons

Note: Gallons for entire system.

DSL Percentage = 11%

3-Year Rolling Average DSL = 12.2%

The approved 2014 goals are:

- Reduce DSL to 40% in 6 years
- Reduce DSL to 30% in 12 years
- Reduce DSL to 20% in 18 years
- Reduce peak month ADD by a minimum of 1% in 6 years

Progress of Meeting Goals:

- 3-year rolling average DSL has decreased from 38% in 2009 to 12% in 2016 with a peak of 50.9% in 2013.
- Annual DSL dropped from around

52% 2011 to 11% 2016.

- Peak month consumption decreased 18.1% since 2009.
- Peak month ADD has decreased more than 17.2% since 2015.
- Total annual consumption has decreased 18.3% since 2009.
- Total well production has increased 24% since 2009.

Steps Need to Meet Goals:

- The Nov 2013 leak repair made a difference in total system leakage.
- A few more smaller leaks were repaired in 2014.
- Another large leak was repaired in 2015.



N. 21971 Highway 101
Shelton, WA 98584