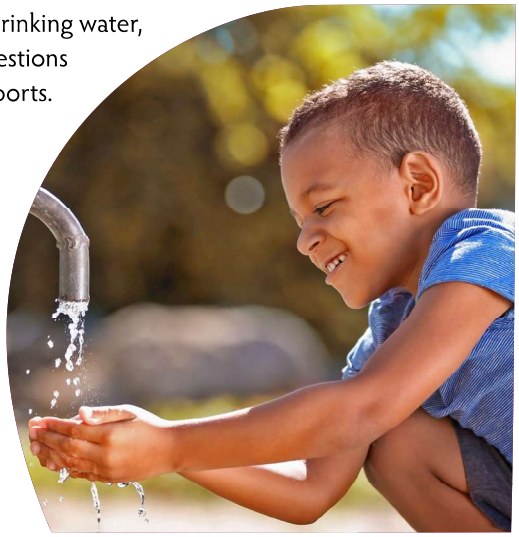
2022 annual waterQuality report

May 1-7, 2022: National Drinking Water Week!

Your Drinking Water Is Safe!

As your Water Division, we are here to ensure that you receive safe drinking water every time you open the tap. Annually, during National Drinking Water Week, we take the opportunity to inform you about your drinking water. Ongoing testing in 2021 showed that your drinking water met or exceeded all state and federal drinking water standards. In compliance with the federal Safe Drinking Water Act and Washington State Department of Health requirements, we are sending this annual report, including testing results from 2021, to every water customer Kirkland serves. You have a right to know what is in your drinking water and where it comes from. With intention to help you make well-educated decisions regarding the water you drink and to encourage you to consider the challenges of delivering safe drinking water, in this report you will find news about water sources, quality, programs and projects. An extensive amount of information is provided in this report.

We hope we have presented it in a user-friendly format, and that the topics are of interest to you. Please contact us if you would like help understanding the information provided, would like more information about your drinking water, or have suggestions for future reports. Our contact information is located at the end of this report. Definitions of terms used can be found beneath the table on page 5.



Mayor, Penny Sweet

Councilmember, Jon Pascal

Cascade Water Alliance

The City of Kirkland is a member of the Cascade Water Alliance (Cascade) along with Bellevue, Issaquah, Redmond, Sammamish Plateau Water and Sewer District, Skyway Water and Sewer District, and Tukwila. Cascade provides its members with safe, clean and reliable water in a cost effective and environmentally responsible manner. Cascade was formed in 1999 to provide you with water today and tomorrow. Each member has a voice in determining its own community's future by ensuring the availability of water. City of Kirkland Mayor Penny Sweet represents Kirkland on the Cascade board. As an organization, Cascade also works closely with all water providers in the Central Puget Sound region ensuring every drop of available water is used BEFORE another source is developed. For more information, visit www.cascadewater.org.

As a member of Cascade, Kirkland purchases its water from Seattle Public Utilities (SPU). The water is then distributed to Kirkland residents through Kirkland's water distribution system. SPU performs most of the sampling and treatment for Kirkland's drinking water. The Kirkland Water Division operates and maintains the system's water distribution lines, pump stations and storage reservoirs. ("Kirkland" and "SPU" will both be used in this report when referring to the water supply.)

Tolt River - photo courtesy of SPU

Our Water Sources

Two watersheds, the South Fork Tolt River Watershed (13,390 acres) and the Cedar River Watershed (90,495 acres), supply all of Kirkland's water. These two surface water sources are located in remote, uninhabited areas of the Cascade Mountains. To protect the quality of our water SPU enforces an aggressive watershed protection plan. Kirkland's water usually comes from the Tolt River Watershed. On rare occasions, such as during summers with high water demands and low precipitation, the Tolt water is supplemented with water from the Cedar River Watershed. In 2021, Kirkland received no water from the Cedar River Watershed.

The Washington State Department of Health (DOH) conducted a source water assessment to determine potential contaminant sources and has determined that all surface water systems are considered highly susceptible to contamination. You can access the full report on Washington's Source Water Assessment Program (SWAP) at the Department of Health's website: www.doh.wa.gov/ehp/dw. Scroll down and click on Source Water and Source Water Protection.

Capital Improvement Program (CIP)

The City of Kirkland is constantly reviewing system hydraulics and statistics to determine long-term budgeting for replacement of old piping and to increase water capacity throughout the system.

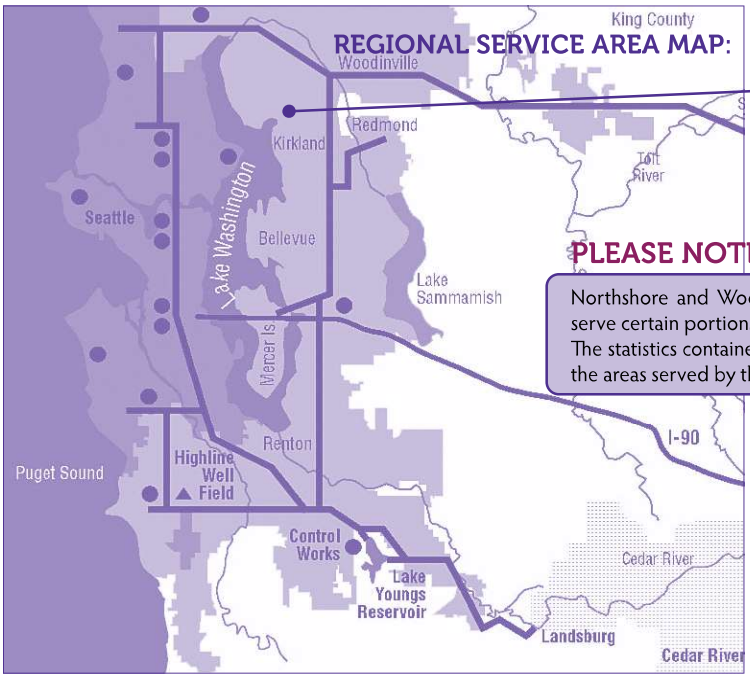
As an example, the City of Kirkland has a comprehensive meter change out program.

The program aims to replace aging meters before their end-of-life. In addition, the City's Water System Comprehensive Plan identifies capital improvement projects to repair aging and undersized water main, fire hydrants, services and valves.

In 2021, the City replaced or repaired 14 substandard fire hydrants and responded to 131 service requests to investigate "leaks" on the customer's side of the water meter.

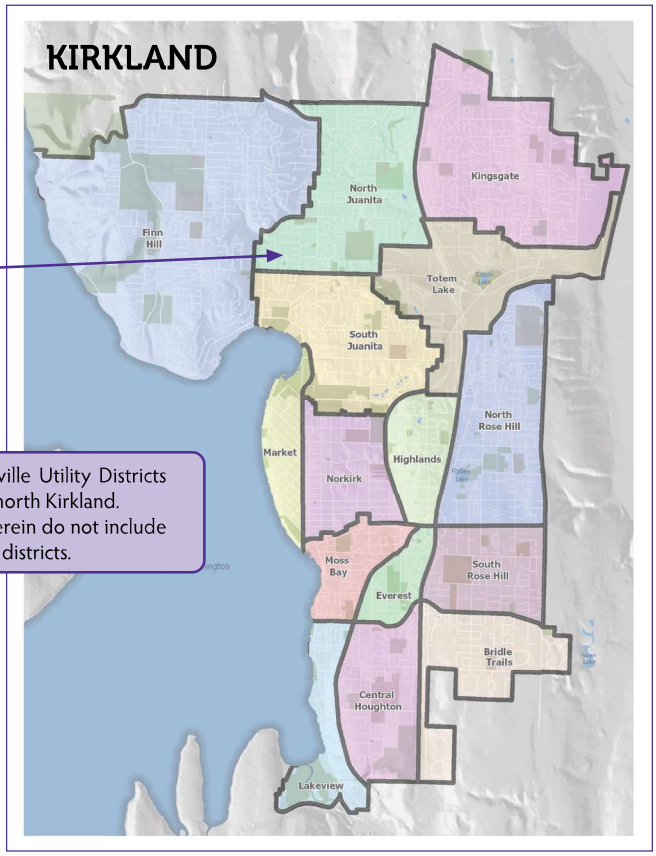
These projects are an integral piece of Kirkland's long-standing commitment to customer satisfaction and service.

For the most up-to-date CIP information, please visit our web page at www.kirklandwa.gov or contact the Water Division at (425) 587-3900.



PLEASE NOTE:

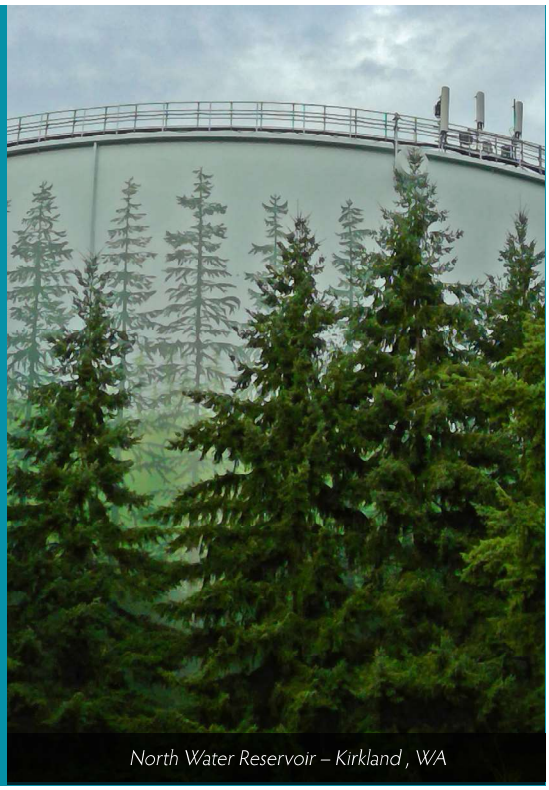
Northshore and Woodinville Utility Districts serve certain portions of north Kirkland. The statistics contained herein do not include the areas served by those districts.



Water Quality Monitoring

SPU staff monitors water quality in the source water, treatment process, and distribution system 365 days a year. Various compounds are monitored at specific frequencies (continuously, daily, monthly, quarterly, or annually) and locations (prior to treatment, entering the distribution system, and throughout the distribution system) in accordance with federal and state regulations. Many of these tests confirm the absence of various contaminants. Water quality monitoring conducted between January 1 and December 31, 2021 confirmed that there were no contaminants at or above established levels of concern for the general public. Please refer to the data tables in this report for more detailed information on water quality monitoring results.

The table titled 'Water Quality Monitoring Results' lists the contaminants detected in 2021 together with their concentrations and possible sources. The following paragraphs describe the significance of a few of these contaminants. Some tests are not required every year; for these tests, the concentrations listed are the results of the most recent testing. If you would like a copy of the list of contaminants that are monitored but were not detected in Kirkland's water, please call (425) 587-3900.



North Water Reservoir – Kirkland , WA

Information on the Potential for Health Concerns Relating to Drinking Water

The sources of all drinking water (both tap water and bottled water) 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 and can pick up substances resulting from the presence of animals or human activity.

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 water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's (EPA's) Safe Drinking Water Hotline (800) 426-4791, or from EPA's Office of Ground Water and Drinking Water web site at https://www.epa.gov/ground-water-and-drinking-water.

Maximum Contaminant Levels (MCLs) are set at very stringent levels. To understand the possible health effects described for many regulated constituents, a person would have to drink 2 liters of water every day at the MCL level for a lifetime to have a one-in-a-million chance of having the described health effect. 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 for infections. These people should seek advice about drinking water from their health care providers. EPA/CDC (Environmental Protection Agency/Center for Disease Control) guidelines on appropriate ways to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (800) 426-4791, and on EPA's web site.

In Kirkland's water supplies, these potential contaminants and their sources include:

POTENTIAL CONTAMINANT	SOURCE
Microbial	Viruses and bacteria from wildlife
Inorganic	Salts and metals which are naturally occurring
Pesticides and herbicides	Agriculture, urban stormwater runoff, residential
Organic	By-products of disinfection processes
Radioactive	Naturally occurring

To ensure that tap water is safe to drink, EPA adopts regulations setting the water quality standards for public water systems. The federal Food and Drug Administration regulates contaminants in bottled water and is responsible for providing the same level of public health protection.

Residential Tap Monitoring for Lead and Copper

Our source waters do not contain lead or copper. However, lead and copper can leach into residential water from building plumbing systems containing copper plumbing, lead-based solder, brass fixtures, or some types of zinc coatings used on galvanized pipes and fittings (individual water services, not water mains). Homes built or plumbed with copper pipe prior to the 1985 King County lead solder ban would have likely used lead-based solder, and are considered "high risk" under EPA's criteria. Brass fixtures, regardless of age, generally contain some lead. Metals can leach into building plumbing systems when the water is stagnant in the pipes for extended periods of time (six hours or greater).

By regulation, lead and copper monitoring is conducted at "high risk" homes. Samples are collected from these homes after the water is allowed to stand in the pipes overnight. We are required to report the "90th percentile" result of the testing. This means that 90 percent of the high-risk homes have concentrations less than the reported value and 10 percent have concentrations higher than the reported value. Lead and copper monitoring were conducted most recently in 2020 and were both at or below the action levels. Compliance is determined on a regional basis.

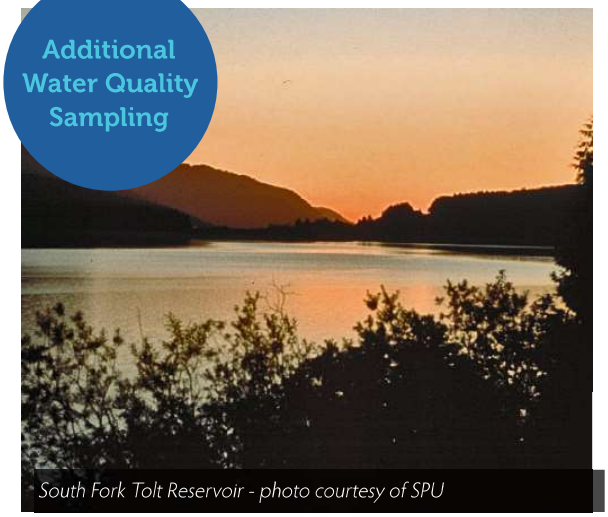
LEAD AND COPPER MONITORING RESULTS (TOLT)

	City of Kirkland – Tolt Water				
Parameter & Units	**MCLG**	**Action Level+**	**2020 Results***	**Number of homes exceeding action level**	**Source**
Lead, in parts per billion	0	15	3.8	0 of 55	Corrosion of household plumbing systems
Copper, in parts per million	1.3	1.3	0.19	0 of 55	

*90th Percentile: i.e. 90 percent of the samples were less than the values shown.
+ The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. City of Kirkland is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead.

Additional Water Quality Sampling



South Fork Tolt Reservoir - photo courtesy of SPU

SPU monitors several parameters in the interest of our customers. The following table lists the water quality information most frequently requested.

PARAMETER & UNITS—TOLT SUPPLY

Alkalinity, Total (as $CaCO_3$), ppm	18.5
Calcium, (as $CaCO_3$), µg/L	8940
Hardness, (as $CaCO_3$), grains/gal.	1.39
Iron, ppb	11.9
Manganese, ppb	0.676
pH, range (2021, 10-90th percentile)	8.0 – 8.5
Potassium, ppb	110
Sodium, ppb	.963
Sulfate, mg/L	1 - 3
Temperature, 2021 annual range,C°	3 - 25

Note: abbreviation definitions available on page 5

2021 Water Quality Monitoring Results: This is what is in your tap water.

DETECTED COMPOUNDS	Units	This level or less is ideal MCLG	This much is allowed MCL	Levels in Tolt water Average	Levels in Tolt water Range	Is your water safe?	Typical Sources
Raw water							
Total Organic Carbon	ppm	NA	TT	1.09	.94 - 1.4	Yes	Naturally present in environment
Finished water							
Turbidity	NTU	NA	TT	0.03	0.23 - 0.31	Yes	Soil runoff
Arsenic	ppb	0	10	0.27	0.23 - 0.31	Yes	Erosion of natural deposits
Barium	ppb	2,000	2,000	1.2	1.1 - 1.3	Yes	Erosion of natural deposits
Bromate	ppb	0	10	0.7	ND - 0.8	Yes	By-product of drinking water disinfection
Fluoride	ppm	4	4	0.7	0 - 0.8	Yes	Water additive, which promotes dental health
Radium 228	Pc/L	0	5	0.8	0.7	Yes	Erosion of natural deposits
Total Trihalomethanes	ppb	NA	80	41	15.5 - 48	Yes	By-products of drinking water chlorination
Haloacetic Acids (5)	ppb	NA	60	28	13.6 - 31.8	Yes	
Chlorine	ppm	MRDLG=4	MRDL=4	1.23	.21 - 1.71	Yes	Water additive used to control microbes

** Initial samples showed a slight detection. Follow-up samples showed no detections.

Definitions

The following definitions are provided to help you better understand any unfamiliar terms and abbreviations included in the above table:

- **Maximum Contaminant Level (MCL):** Highest level of a contaminant allowed in drinking water. MCLs are set as close to the MCLGs as feasible using 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):** 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.
- **Treatment Technique (TT):** A required process intended to reduce the level of a contaminant in drinking water.
- **NTU: Nephelometric Turbidity Unit :** Turbidity is a measure of how clear the water looks. The turbidity MCL that applied to the Cedar supply in 2021 is 5 NTU, and for the Tolt supply it was 0.3 NTU for at least 95% of the samples in a month. 100% of Tolt samples in 2021 were below 0.3 NTU.
- **Action Level (AL):** The concentration of a contaminant, which, if exceeded, triggers treatment, or other requirements, which a water system must follow.
- **NA:** Not Applicable
- **ND:** Not Detected at or above the minimum reporting level - laboratory analysis indicates that the constituent is not present.
- **1 mg/L** = 1000 µg/L

For water samples:

- **1 part per million (ppm)** = 1 mg/L (corresponds to one minute in two years or a single penny in $10,000)
- **1 part per billion (ppb)** = 1 µg/L (corresponds to one minute in 2,000 years, or a single penny in $10,000,000)
- **1 ppm =** 1000 ppb
- **pCi/L =** picocuries per liter

Tolt tributary - photo courtesy of SPU

Cryptosporidium

Cryptosporidium parvum is a protozoan pathogen (disease-causing organism) commonly found in the natural environment. Most rivers and streams across the country have detectable concentrations of this pathogen. In SPU's surface water sources Cryptosporidium sources include wild animals in the watersheds. The ozonation disinfection method at the Tolt Filtration Plant is very effective at destroying Cryptosporidium and other microbial organisms. SPU monitored for Cryptosporidium in the source water (prior to treatment). Cryptosporidium samples are not required to be collected from the Tolt supply due to removal and inactivation of Cryptosporidium by the Tolt Filtration Plant; however, SPU began collecting samples in 2005. Cryptosporidium was not sampled from the Tolt supply in 2021.

Unregulated Contaminant Monitoring

Every five years, EPA issues a new list of no more than 30 chemical and/or biological substances to be monitored by public water systems. These substances are suspected to be present in drinking water and do not have health-based standards set under the Safe Drinking Water Act. Below is the list of compounds detected during this monitoring period.

2021 UNREGULATED CONTAMINANTS RESULTS				
Detected Compounds	Units	Average	Range	Source
Manganese Total ICAP/MS	ppb	1.27	.63 - 1.9	Erosion of natural deposits
Bromodichloroacetic acid	ppb	.94	.57 - 1.4	By-product of drinking water chlorination
Dichloroacetic acid	ppb	2.57	.87 - 4.9	"
Total HAA5	ppb	17.65	7.2 - 27	"
Total HAA6Br	ppb	.94	.57 - 1.4	"
Total HAA9	ppb	18.28	7.2 - 28	"
Trichloroacetic acid	ppb	15	6.3 - 24	"

Water-Use Efficiency Rule – Report to customers

The 2003 Municipal Water Law (HB1338) aimed at addressing the increasing demand on our state's water resources, established planning requirements, leakage standards and water conservation goal-setting and reporting requirements. In 2019, rather than each member setting its own goals, Cascade led the public process of goal-setting for all its members and a common regional goal was achieved. That goal: dedicate the necessary resources to achieve a cumulative, annual drinking water savings of 400,000 gallons per day by December 31, 2022.

Cascade Water Alliance (Cascade) provides water efficiency programs and services on behalf of its members, which are Bellevue, Issaquah, Kirkland, Redmond, Tukwila, Sammamish Plateau Water District, and Skyway Water and Sewer District. In 2020, Cascade responded to the pandemic by adopting conservation program measures for remote delivery options and continuing to offer some programs unchanged. Highlights of the 2021 program include:

Community Engagement

- Remote Learning Materials
- Online learning packets – accessed 1,405 times
- 493 presentations delivered w/10,614 student impacts
- Live remote classes offered and video chat sessions for deeper inquiry into subjects
- Support of teachers and students who want more in-depth learning about water systems and water issues through the problem-based learning for water systems program
- "We Need Water" social media campaign showcasing Cascade's programs and water issues and co-promoting Cascade member activities
- Promotion of the US EPA's Annual Fix-A-Leak Week
- Participation in the Northwest Flower and Garden Show and Issaquah's Salmon Days
- 13 remote gardening classes with 2,102 attendees
- Six in-person garden walking tours with 119 attendees

Water Savings Measures
Direct Installations, Rebates, Distribution

- 1,095 rebates for EnergyStar-labeled clothes washers
- 180 rebates for WaterSense-labeled showerheads
- 2,081 free shower timers, rain gauges, toilet leak detection dye, and other conservation items provided through Cascade's website
- Free conservation items delivered upon request to multifamily properties and Cascade members for distribution to customers
- Irrigation system assessments for high-use customers such as school districts, parks departments, and HOA's

Water Conservation Partnerships

- Participation in regional Garden Hotline with 174 contacts
- Partnership with Tilth Alliance to deliver the Soil and Water Stewardship Program, which trains residents on sustainable landscaping, rainwater Harvesting, drip irrigation, and other water-related topics—12 community projects and training sessions with a total of 138 attendees
- Partnership with Lake Washington Institute of Technology to offer Sustainable Landscape Technologies Accredited Program to train students, industry professionals on basics of efficient irrigation systems, sustainable landscaping
- Partnership with Sno-King Watershed Council to train residents for stream monitoring at local water resources.

These programs and services promoted water efficiency and stewardship of water resources resulting in thousands of customer interactions representing all Cascade members and achieved an estimated savings of 37,092 gallons of water per day in 2021. Along with 2019-20 savings, this represents 57% of Cascade's 2019 – 22 Water Use Efficiency Goal.

Water Treatment

The Tolt and Cedar water supplies are disinfected with chlorine, which destroys Giardia, bacteria, and viruses that may be present in the source water. Because our waters are naturally very soft, minerals, such as calcium oxide and sodium carbonate, are added to help inhibit corrosion in building plumbing systems. In accordance with a Seattle public vote held in November 1968, SPU also adds fluoride to the drinking water at appropriate levels to prevent tooth decay.

The Tolt supply is treated at a filtration and ozonation facility. Tolt filtration improves water quality to a level beyond what is required by current standards as well as satisfying increases in standards proposed for the future. It also allows the reservoir to be operated in all weather conditions (prior to the filtration plant update certain conditions rendered the river too muddy to be used at times) and produces additional water supply from the Tolt reservoir. The Cedar Treatment Facility is the largest facility in the United States to use ultra-violet light technology to disinfect drinking water. Details about SPU' planned capital improvements are available at www.seattle.gov and search for water system projects.

Water Clarity

Turbidity, a measure of water's clarity, has no direct health effect but indicates the overall quality of the water. High turbidity can reduce the effectiveness of disinfection. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches. SPU's source waters have very low turbidity. The unit of measurement for turbidity is the NTU (nephelometric turbidity unit). SPU monitors source water turbidity continuously on the Tolt. The turbidity MCL that applied to the Tolt supply in 2021 is 0.3 NTU, and for the Cedar supply it was 5 NTU for at least 95% of the samples in a month. 100% of Tolt samples in 2021 were below 0.3 NTU.

Tolt Resevoir Spillway - photo courtesy of SPU

The Purpose of Disinfection, and the Resulting Disinfection By-Products

Drinking water is disinfected to destroy bacteria, viruses, and Giardia. However, as the disinfectant reacts with naturally occurring organic matter in the water, disinfection by-products are formed. Disinfection by-products have been linked to increased cancer risks from drinking water containing high levels (greater than the MCLs) over many years. Drinking water regulations provide a balance between required levels of disinfection and the resulting disinfection by-products. SPU's Tolt Filtration Plant improves Kirkland's ability to provide a higher level of microbial protection while maintaining or reducing disinfection by-product levels.

Kirkland's Water System Facts*

* Please note that certain portions of north Kirkland are served by the Northshore and Woodinville Utility Districts. These statistics do not include areas served by the districts.

- Square miles served = 9.8
- Population served = 61,564
- City of Kirkland Connections = 13,198
  - Single-family Residential = 11,182
  - Multi-family = 790
  - Commercial = 743
  - Irrigation Systems = 478
  - Bellevue & Redmond Connections served by Kirkland = 4,086 (2021)
- Average Water Usage (2021 data)
  - Entire System = 5.8 million gallons per day

Record Water Usage = 16.2 million gallons (July 20, 1994)

KIRKLAND'S WATER FACILITIES

- Water Storage Capacity
  - North Reservoir (Mark Twain Park) = 14.3 million gallons
  - South Reservoir (Bridle Trails) = 11.5 million gallons
- Miles of Water Main (pipe) = 176
- Number of Fire Hydrants = 1,918
- Number of Pump Stations = 3
- Number of Pressure Control Stations = 36

UPGRADED: During 2021, Kirkland Water crews replaced or repaired 44 water service lines.

Frequently Asked Questions

HOW CAN I GET MORE INVOLVED IN DECISIONS AFFECTING MY DRINKING WATER?

Please contact the Water Division at the telephone number or e-mail address listed at the end of this report with any questions, suggestions or concerns. Water-related issues are often presented to Kirkland City Council; the public is welcome to attend council meetings. To determine the Kirkland City Council's meeting schedule and/or topics to be discussed, call (425) 587-3197. Information regarding Washington State legislation is available at www.leg.wa.gov/legislature.

WHAT CAUSES TASTES AND ODORS, AND WHAT ARE SOME REMEDIES?

Most of the taste and odor complaints that SPU receives are about chlorine or the earthy, musty taste caused by blue-green algae that grow naturally in SPU's source waters. These algae are not harmful to your health. Chilling the water or adding lemon to the water can reduce taste and odor problems. The filtration and ozonation facilities on the Tolt supply eliminated taste and odor problems from that source.

HOW CAN I LEARN WAYS TO CONSERVE WATER?

In partnership with the Cascade Water Alliance, Kirkland has a variety of programs to conserve this vital natural resource and stabilize or reduce your water bill. For more information, please contact the Water Division (425) 587-3907.

WHO CAN I CONTACT REGARDING MY UTILITY BILL, PERMITS, EMERGENCIES, ETC.?

- Billing or Consumption Records/Questions – Customer Accounts (425) 587-3150
- General Drinking Water Questions – Water Division (425) 587-3900
- Water Emergencies – Water Division (425) 587-3900
- To Report Illegal Fire Hydrant Use – Water Division (425) 587-3900
- Plumbing Permits – Building Department (425) 587-3600
- Capital Improvement Projects – Capital Projects Manager (425) 587-3833

This material can be made available to accommodate people with disabilities at the TTY relay number 711.

HOW CAN I GET MORE WATER QUALITY INFORMATION?

City of Kirkland web site ..... www.kirklandwa.gov
City of Kirkland Water Division e-mail ..... https://kirklandwa.qscend.com/ourkirkland
City of Kirkland telephone number ..... (425) 587-3900
City of Kirkland address ..... 123 Fifth Avenue, Kirkland, WA 98033
Washington Department of Health - Drinking Water web site ..... www.doh.wa.gov/ehp/dw
U.S. Environmental Protection Agency web site ..... www.epa.gov/your-drinking-water/safe-drinking-water-hotline
EPA Safe Drinking Water Hotline ..... (800) 426-4791

This material can be made available to accommodate people with disabilities at the City of Kirkland's TTY telephone number (425) 587-3111.

供水水相关信

如需此文件中信息的简体中文 版本，请发送电子邮件至 titlevicoordinator@kirklandwa.gov 或拨打 (425) 587-3831 联络 Title VI 协调员。

Информация о водоснабжении

Чтобы запросить перевод этого документа на по-русски, свяжитесь с координатором по вопросам Раздела VI по электронной почте titlevicoordinator@kirklandwa.gov или по номеру (425) 587-3831

Información sobre agua

"Para pedir información sobre este documento en en español, comuníquese con el coordinador del Título VI escribiendo a titlevicoordinator@kirklandwa.gov o llamando al (425) 587-3831."

Informações de água

"Para solicitar informações deste documento em português, entre em contato com o Coordenador do Título VI em titlevicoordinator@kirklandwa.gov ou (425) 587-3831."