

Ketchikan Public Utilities
2022 Annual Water Quality Report
Public Water System 2120232
2930 Tongass Avenue
Ketchikan, AK 99901

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Ketchikan Public Utilities (KPU) believes it is important to help our customers become better informed about where their drinking water comes from, what is involved in the delivery of safe drinking water, and the importance of source water protection at Ketchikan Lakes. We are pleased to present this, our twenty-second report, for the period between January and December 2022.

This report contains important information about your drinking water. For the benefit of those non-English speaking Ketchikan residents, please have the report translated, or speak with someone who understands it. In Tagalog; Mahalaga ang impormasyong ito. Mangyaring ipasalin ito. In Spanish; Este informe contiene información muy importante sobre su agua potable. Tradúzcalo o hable con alguien que lo entienda bien.

Ketchikan enjoys one of the purest and most plentiful supplies of drinking water in the world. Nevertheless, many of us who once gave no thought to the water that comes from our faucets are now asking the same question; “Is my water safe to drink?” Despite the presence of a group of EPA regulated chemical compounds known as disinfectant byproducts (discussed in greater detail on page 3 of this report) that have at intermittent times, been higher than EPA permissible standards, our answer remains: Yes, it is!

Why am I receiving this report?

Congress passed the Safe Drinking Water Act in 1974 in response to nationwide concern about the safety of public drinking water supplies. The Environmental Protection Agency (EPA) was authorized to establish minimum standards and requirements for all public water suppliers. Continuing legislation since that time has included the requirement that consumers of water (including those with special health needs) be provided with information, which will allow them to make informed decisions regarding their drinking water.

What if I have questions about my water?

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 Safe Drinking Water Hotline (800-426-4791).

For more information about your drinking water, please call John Kleinegger, KPU’s Water Division Manager, at 907-228-2441. Also, you are welcome and encouraged to attend public meetings of the Ketchikan City Council. They meet on the first and third Thursdays of every month at 7:00 pm in the City Hall’s Karl R. Amylon Council Chambers located at 334 Front Street.

Copies of the annual 2022 Onsite Watershed Inspection Report conducted by the State Department of Environmental Conservation (ADEC), the latest 2022 sanitary survey of the entire municipal water system conducted by the Alaska Rural Water Association, as well as our Ketchikan Creek Watershed Control Plan completed in May 2022 are all available upon request to KPU.

Where does our water come from?

The Ketchikan Lakes water supply includes over 11 square miles of watershed consisting of the drainage area surrounding Ketchikan Lakes and Granite Creek. These two drainage basins feed Fawn Lake through a series of tunnels and penstocks. Leaving Fawn Lake, another series of tunnels then conducts water down to the intake of the water system located on Fair Street across from the City Park. There, the raw surface water begins the disinfection process when thoroughly mixed with chlorine. It then travels a mile along Schoenbar Road to the Ultraviolet Light (UV) Disinfection Facility for additional disinfection. From the UV Facility, an additional amount of chlorine is added to mix with a small amount of ammonium hydroxide injected just before water enters the Bear Valley Reservoir. Within the 3-million gallon reservoir, ammonia combines with the unreacted chlorine to form the final chloramine disinfectant and is distributed throughout Ketchikan's municipal water system. Chloramine disinfection began on April 8, 2014 and is now further enhanced with secondary chlorine injection that began on June 14, 2016. Our use of dual disinfectants with extra disinfection time are necessary to ensure that any viruses, bacteria, or any other pathogens that may have been present in the raw water are completely destroyed before ever entering your drinking water.

What contaminants might be in our water?

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 from human activity.

Contaminants that may be present in our source water include:

- A) Microbial contaminants, such as viruses and bacteria, which may come from wildlife and human activity.
- B) Inorganic contaminants, such as salts and metals, which can be naturally occurring or result from storm water runoff.
- C) Organic chemical contaminants, including synthetic and volatile organics, which are by-products of industrial processes, and can also come from storm water runoff.

Are there contaminants in Ketchikan's water?

As required by ADEC, we send water samples every year to independent, certified laboratories for analysis using the latest, modern equipment. When last tested in 2011, of all of the regulated inorganic contaminants, only minute amounts of barium, chromium, and thallium were found present. All of the other inorganic contaminants still remained below the Method Reporting Limit (MRL). Note also that the amounts of barium, chromium, and thallium that were present are all well below the EPA maximum allowable levels (MCL) for these contaminants. The next set of inorganic analyses are due between 2020 and 2028.

As an unfiltered water system, we are required to monitor our turbidity continuously. Turbidity is a measure of the cloudiness of the water and we test for it because it is an indicator of microbiological quality. The standard allowable raw water turbidity for an unfiltered water system like Ketchikan's is 5 Nephelometric Turbidity Units (NTU's). The normal turbidity levels in our raw water supply from Ketchikan Lakes generally ranges between 0.2 - 1.0 NTU and in 2022, 1.97 NTU's was the highest turbidity recorded. However, heavy rainfall can cause periods of significantly higher turbidity primarily in the Granite Basin portion of our watershed not only during the annual Southeast Alaska fall storms, but also during periods of heavy rainfall following a dry spell. When needed, KPU has procedures in place to divert the raw water being supplied from Granite Basin Creek. In addition, Ketchikan Lakes also directly supplies the Ketchikan Power House hydrogenerators which may be sped up to help flush out the increased turbidity.

These methods along with the use of chlorine and ultraviolet light as dual disinfectants provides Ketchikan's water distribution system with ample disinfection. Disinfected, treated water samples are collected weekly throughout the municipal distribution system and have reported **Zero (0)** coliform bacteria colonies results.

Volatile organic contaminants are also created when the naturally occurring organics produced during the wood decay process are carried by rainfall runoff into the Ketchikan Lakes. The greatest amount of these dissolved organics in the raw water occurs during the warmer and drier summer months and when they combine with the chlorine solution being added for disinfection, a group of EPA regulated chemical compounds are formed known as disinfection byproducts. They are Total Trihalomethanes (TTHM's) and Haloacetic acids (HAA5's). The maximum contaminant level (MCL) for TTHM's is 80 parts per billion (ppb) and for HAA5's, 60 ppb.

The EPA's Stage 2 Disinfection Byproducts Rule (Stage 2 DBPR) that went into effect in 2014 placed additional responsibility upon Ketchikan to reduce HAA5 formation by requiring quarterly sampling at the two worst-case scenarios within the distribution system and just at specific months. The 2022 running quarterly average HAA5 results at those two worst-case sites at the four specific months were 41.5 ppb and 48.6 ppb, both are significantly less than the 60 ppb MCL. Similarly, the 2022 running quarterly TTHM average, expressed at the same Stage 2 DBPR sampling basis, found both sites were averaging 31.8 and 31.2 ppb; which are both well below the 80 ppb MCL.

Starting in April 2014, both chlorine and ultraviolet light (UV) began use as dual disinfectants followed by ammonia injection to create chloramines to reduce HAA5 creation. In June 2016, another improvement began by reducing the chlorine amount at the primary site linked with adding the minimal amount necessary for chloramine formation at the secondary site. An additional reduction began January 2020, when the primary site's chlorine residual set point was further reduced to 0.4 ppm. As a result, all of these changes together, have significantly reduced the amount of HAA5 formation.

Ketchikan is now in compliance with all Federal drinking water standards.

Is our water safe for everyone?

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/Centers for Disease Control guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbiological contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

In the Table below, you will find many terms and abbreviations you might not be familiar with. To help you better understand these terms we've provided the following definitions:

Non-Detects (ND) - laboratory analysis indicates that the contaminant is not present.

Parts per million (ppm) or Milligrams per liter (mg/l) – corresponds to one part per million parts. For ease of comparison, illustrations of just how small a part per million (ppm) is are the following examples; a ppm is equal to one minute in 2 years or 1 penny in \$10-thousand dollars

Parts per billion (ppb) or Micrograms per liter – corresponds to one part per billion parts. Similarly, illustrations of just how small is a part per billion (ppb) are the following examples; a ppb is equal to one minute in 2000 years or 1 penny in \$10-million dollars.

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

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

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

Maximum Contaminant Level (MCL) - The “Maximum Allowed” 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 - The “Goal” (MCLG) is 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 the 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.

TEST RESULTS						
Contaminant	MCL Violation	Level Detected	Unit Measurement	MCL G	MCL	Likely source of contamination to the best of our present knowledge
Microbiological Contaminants						
Turbidity (2022) Note (1)	No	1.97	NTU	n/a	5	Soil runoff
Note (1) turbidity is a measure of the cloudiness of the water. We test it because it is an indicator of microbiological quality.						
Chemical Contaminants						
Chloramines (2022) Note (2)	No	2.09	ppm	MRD LG=4	MRD L=4	Water additive used to control microbes
Note (2) The 12-14 distribution disinfection samples collected monthly to confirm zero (0) coliform colonies present and the Chloramine residual throughout the community generally runs between 1.2-1.6 ppm. Occasional samples may be 1.0 ppm or less and none exceeded 2.09 ppm.						

Inorganic Contaminants							
Copper (2021) 90 th percentile reporting	Note (3)	No	0.290	ppm	1.3	AL= 1.3	Corrosion of household plumbing
Lead (2021) 90 th percentile reporting	Note (4)	No	3.3	ppb	zero	AL= 15	Corrosion of household plumbing
Note (3) None of the twenty samples exceeded the current action level of 1.3 ppm. Next test cycle is due in 2024.							
Note (4) None of the twenty samples exceeded the current action level of 15 ppb. Next test cycle is due in 2024.							
Volatile Organic Contaminants							
TTHM (Total Trihalomethanes) (2022) Note (5)	No	31.2 & 31.8	ppb	n/a	80		By-product of water chlorination
HAA5 Haloacetic Acids (2022) Note (6)	No	41.5 & 48.6	ppb	n/a	60		By-product of water chlorination
Note (5) In 2022, a total of eight samples were taken at two specific distribution sites. The TTHM individual analytical results ranged between 18.8 and 45.2 ppb.							
Note (6) In 2022, a total of eight samples were taken at two specific distribution sites. The HAA5 individual analytical results ranged between 29.4 and 71.1 ppb.							

Disinfection Byproducts (DBP) Contaminants:

Although 2022's locational running annual averages (LRAA) of the previous four quarterly HAA5 samples collected from each site are reported in the Table above, when the recent February 2023's samples are included into the next four quarterly LRAA calculation, it continued almost unchanged; 41.6 ppb and 48.8 ppb. Both of these sites are continuing to average below the EPA's 60 ppb maximum contaminant level (MCL) for HAA5's. **For the past 6½ years Ketchikan has remained in compliance with the Stage 2 DBP Rule for both HAA5's and TTHM's.**

Monitoring Waivers:

ADEC granted Statewide Use Waivers in 1994 for Asbestos and Dioxin and a Waiver by Rule issued for Cyanide. They also granted a Susceptibility Waiver for Synthetic Organic Chemicals (SOC) after 1993 sampling; all of which were below the detection limit of the analytical equipment. This Waiver has continued to be granted and was most recently reapproved for the 2020-2022 period.

Concerning radioactivity in our water:

Samples of Ketchikan's water are collected for analysis by an independent laboratory to determine if our water contains any radioactive isotopes. In the 2016 and 2005 samples, the emitted alpha and beta particles from these regulated element isotopes were found to be either at or below the minimum detectable threshold of the laboratory's analytical equipment. Similarly negative results occurred in 2001 when our water was tested only for radon. The next set of samples is due to be collected between 2017 and 2025.

Concerning lead in our water:

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. KPU 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 the 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 (800-426-4791) or at <http://www.epa.gov/safewater/lead>.

The EPA's proposed revisions to the Lead and Copper Rule (LCR) were not adopted in 2021 as anticipated. In this revised LCR, all water systems were to prepare and update a lead service line inventory, follow new, improved sampling procedures, and sample those sites found with higher levels more frequently. Since children are most at risk, the EPA also proposed that community water systems sample drinking water outlets at 20% of the schools and 20% of the child care facilities every year until all have been sampled. Despite the delay, these LCR revisions are still likely to be adopted before KPU's next set of samples are due to be collected during the summer of 2024.

Instead for 2021, the EPA kept the existing LCR regulations that require lead and copper samples to be collected every 3 years during the summer months from twenty residences constructed during the final years when lead soldered plumbing was legal. As KPU was due for LCR retesting in 2021, twenty residential samples were collected and the results are reported in Table I above. As far as the drinking water delivered from KPU's water mains is concerned, it has always been much less than the EPA's MCL for lead. Three samples that were collected in 2008 from KPU's water mains ranged between 0.50 and 0.71 ppb lead.

Concerning arsenic in our water:

Nationwide, there was significant discussion during 2002 concerning the amount of arsenic permissible in drinking water and the Maximum Contaminant Level (MCL) was lowered by the EPA from 50 ppb to 10 ppb. Ketchikan's arsenic level has been tested for years by independent laboratories, most recently in 2012 and was not detected even at the 1 ppb level. With Ketchikan's consistently low arsenic results, the next sample is due to be taken between 2020 – 2028.

Concerning the pH, Corrosion Control Effects, and PFAS (perfluoroalkyl substances) content of our water:

The EPA's National Secondary Drinking Water Regulations set non-mandatory water quality standards for pH with a range between 6.5 - 8.5 pH. Ketchikan's drinking water averages 7.8 pH and ranges between 7.3 - 8.2 pH.

KPU's corrosion control program consists of both the addition of "soda ash" or sodium carbonate (Na_2CO_3) for pH control supplemented with phosphoric acid (H_3PO_4), also known as orthophosphate. Their purpose is to prevent any exposed lead from leaching into drinking water by depositing a protective scale within the interior of any lead-soldered copper plumbing still remaining in older residences or other structures

Noting the adverse health effects being associated with PFAS ingestion, samples were collected in 2019 of our disinfected drinking water as it enters our distribution system. The results are all expressed as < 2.0 nanograms per liter (ng/L) which is a notation for and equivalent to results of less than 2.0 parts per trillion. For ease of comparison, a part per trillion (PPT) is extremely minute and is equal to one minute in 200,000 years or 1 penny in \$10-billion dollars.

KPU has already been notified that we will be participating in the EPA's Fifth Unregulated Contaminant Rule (UCMR 5) sampling project for 30 presently unregulated PFAS contaminants that might be present in our drinking water. We'll begin sampling every two months beginning January 2023 and continuing through December 2025.