

ANNUAL WATER QUALITY REPORT

REPORTING YEAR 2019



Presented By
City of Flagstaff



Our Mission at Flagstaff Water Services Continues

We are once again pleased to present our annual Water Quality Report covering all testing performed between January 1 and December 31, 2019. Over the years, we have dedicated ourselves to producing the highest-quality drinking water that meets all state and federal standards. We continually strive to adopt new methods for delivering the best-quality drinking water to you. As new challenges to drinking water safety emerge, we remain vigilant in meeting the goals of source water protection, water conservation, and community education while continuing to serve the needs of all our water users.

Please remember that we are always available should you ever have any questions or concerns about your water.

Important Health Information

While your drinking water meets the U.S. EPA's standard for arsenic, it does contain low levels of arsenic. The EPA's standard balances the current understanding of arsenic's possible health effects against the costs of removing arsenic from drinking water. The EPA continues to research the health effects of low levels of arsenic, which is a mineral known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems.

In the most recent round of arsenic sampling, results showed 0.0055 ppm. The MCL for arsenic is 0.010 ppm.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised 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 may be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. The U.S. EPA/CDC (Centers for Disease Control and Prevention) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline at (800) 426-4791 or <http://water.epa.gov/drink/hotline>.



Lead in Home Plumbing

Lead, in drinking water, is primarily from materials and components associated with service lines and home plumbing. If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. We are responsible for providing high quality drinking water, but we 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. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline at (800) 426-4791 or at www.epa.gov/safewater/lead.



Public Meetings

We want our valued customers to be informed about your water quality. If you would like to learn more about public participation or to attend any of our regularly scheduled meetings, please contact the Water Services Division at (928) 213-2400. Flagstaff Water Commission meetings are held the third Thursday of each month. Meeting locations are posted on the official City bulletin board at City Hall, 211 W. Aspen Ave., Flagstaff, AZ 86001, and on the City's Web page at www.flagstaff.az.gov/1275/water-services.

QUESTIONS?

For more information about this report, or for any questions relating to your drinking water, please contact Steve Camp, Regulatory Compliance Manager, at (928) 213-2475, or Brian Huntzinger, Water Production Manager, at (928) 774-0262 or send an email message to waterquality@flagstaffaz.gov.

Substances That Could Be in Water

To ensure that tap water is safe to drink, the Arizona Department of Environmental Quality prescribes regulations limiting the amount of certain contaminants in water provided by public water systems. U.S. Food and Drug Administration regulations establish limits for contaminants in bottled water. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of these contaminants does not necessarily indicate that the water poses a health risk.

The sources of 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, in some cases, radioactive material, and substances resulting from the presence of animals or from human activity. Contaminants that may be present in source water include:

Microbial Contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, or wildlife;

Inorganic Contaminants, such as salts and metals, which can be naturally occurring or may 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;

Organic Chemical Contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production and may also come from gas stations, urban stormwater runoff, and septic systems;

Radioactive Contaminants, which can be naturally occurring or may be the result of oil and gas production and mining activities.

More information about contaminants in tap water and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline at (800) 426-4791 or visit online at www.epa.gov/safewater/hotline. Information on bottled water can be obtained from the U.S. Food and Drug Administration.



FLAGSTAFF WATER FACTS



In 2019, each household used an average of **139 gallons** of water per day.

An average of **7.3 million gallons** of potable water are used citywide each day, with a peak of **10.83 million gallons** on June 21, 2019.

Lake Mary has capacity of **16,300 acre-feet** and provided **32%** of the City's potable water needs in 2019.



For every 1 inch of rain on 1,000 square feet of roof, **600 gallons** of water can be collected through rainwater harvesting.

Reclaimed water accounts for **18%** of water supplies to customers last year.

The City maintains **438.4 miles** of water main and utilizes **26** active wells.



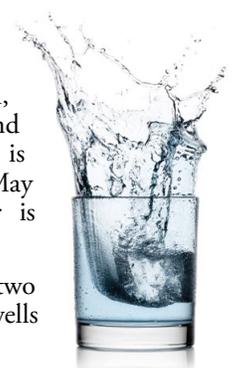
The USGS estimates that only **4%** of rain and snow that falls on the ground recharges the Coconino (C) aquifer.

Flagstaff customers have reduced their water consumption by **50%** since 1988 with conservation and other City initiatives.

Water Source And Treatment Process

The City of Flagstaff, Arizona, produces drinking water from three sources:

1. Upper Lake Mary - Raw water from Upper Lake Mary is pumped approximately 5 miles from a raw water pump station located near the Lower Lake Mary dam to the Lake Mary Water Treatment Plant. Water is pretreated with chlorine dioxide, to prevent formation of disinfection by-products, and then treated in a conventional filtration plant, consisting of coagulation, flocculation, sedimentation, filtration, and disinfection. Final treated water is mixed with groundwater from the Lake Mary wellfield prior to being pumped to the City's distribution system.
2. Seasonal runoff from the Inner Basin of the San Francisco Peaks. - North Reservoir Filtration Plant - The Inner Basin was Flagstaff's original and only water source until 1942. Water from a system of developed springs, infiltration galleries, and three groundwater wells is treated at the North Reservoir Filtration Plant. Water enters the plant with a very low turbidity and is treated by filtration, consisting of traveling bridge sand filters, and disinfection. Water from the Inner Basin is seasonal and is typically available from May through September. Once treated, water is pumped to the City's distribution system.
3. Deep groundwater wells located in two wellfields outside of town, and seven local wells located inside of town.



Test Results

Our water is monitored for many different kinds of substances on a very strict sampling schedule. Also, the water we deliver must meet specific health standards. Here, we show only those substances that were detected in our water. (A complete list of all our analytical results is available upon request.) Remember that detecting a substance does not mean the water is unsafe to drink; our goal is to keep all detects below their respective maximum allowed levels.

The state recommends monitoring for certain substances less often than once per year because the concentrations of these substances do not change frequently. In these cases, the most recent sample data are included, along with the year in which the sample was taken.

We participated in the 4th stage of the U.S. EPA's Unregulated Contaminant Monitoring Rule (UCMR4) program by performing additional tests on our drinking water. UCMR4 sampling benefits the environment and public health by providing the the EPA with data on the occurrence of contaminants suspected to be in drinking water, in order to determine if the EPA needs to introduce new regulatory standards to improve drinking water quality. Unregulated contaminant monitoring data are available to the public, so please feel free to contact us if you are interested in obtaining that information. If you would like more information on the U.S. EPA's Unregulated Contaminant Monitoring Rule, please call the Safe Drinking Water Hotline at (800) 426-4791.

REGULATED SUBSTANCES							
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Alpha Emitters (pCi/L)	2017	15	0	5.1	2.4–5.1	No	Erosion of natural deposits
Arsenic (ppb)	2019	10	0	5.5	NA	No	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes
Barium (ppm)	2019	2	2	0.430	NA	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Chlorine Dioxide (ppb)	2019	[800]	[800]	319	ND–319	No	Water additive used to control microbes
Chlorine (ppm)	2019	[4]	[4]	0.62	ND–1.11	No	Water additive used to control microbes
Chlorite (ppm)	2019	1	0.8	0.535	ND–0.535	No	By-product of drinking water disinfection
Chromium (ppb)	2019	100	100	1.6	NA	No	Discharge from steel and pulp mills; Erosion of natural deposits
Combined Radium (pCi/L)	2017	5	0	0.6	ND–0.6	No	Erosion of natural deposits
Fluoride (ppm)	2019	4	4	0.075	NA	No	Erosion of natural deposits; Water additive that promotes strong teeth; Discharge from fertilizer and aluminum factories
Haloacetic Acids [HAAs] (ppb)	2019	60	NA	16	ND–36	No	By-product of drinking water disinfection
Nitrate (ppm)	2019	10	10	1.6	ND–1.6	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
TTHMs [Total Trihalomethanes] (ppb)	2019	80	NA	24	ND–46	No	By-product of drinking water disinfection
Toluene ¹	2019	1	1	0.00071	0.00062–0.00071	No	Discharge from petroleum factories
Total Organic Carbon ² (ppm)	2019	TT	NA	4.9	3.7–4.9	No	Naturally present in the environment
Uranium (ppb)	2017	30	0	1.0	0.9–1.0	No	Erosion of natural deposits

REGULATED SUBSTANCES

Tap water samples were collected for lead and copper analyses from sample sites throughout the community.

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AL	MCLG	AMOUNT DETECTED (90TH %ILE)	SITES ABOVE AL/TOTAL SITES	VIOLATION	TYPICAL SOURCE
Copper (ppm)	2017	1.3	1.3	0.280	0/32	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead (ppb)	2017	15	0	2.1	0/32	No	Corrosion of household plumbing systems; Erosion of natural deposits

¹*travel blank detected 0.00061 mg/L
²The value reported under Amount Detected for TOC is the lowest ratio between the percentage of TOC actually removed to the percentage of TOC required to be removed. A value of greater than 1 indicates that the water system is in compliance with TOC removal requirements. A value of less than 1 indicates a violation of the TOC removal requirements.

UNREGULATED AND OTHER SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH
HAA5 (ppb)	2019	31	ND-31
HAA6Br (ppb)	2019	7.2	ND-7.2
HAA9 (ppb)	2019	35	ND-35
Manganese (ppb)	2018	1.8	ND-1.8
Quinoline (ppb)	2018	0.0598	ND-0.0598
Sodium (ppm)	2019	6.8	2.4-6.8

Definitions

90th %ile: The levels reported for lead and copper represent the 90th percentile of the total number of sites tested. The 90th percentile is equal to or greater than 90% of our lead and copper detections.

AL (Action level): The concentration of a contaminant that, if exceeded, triggers treatment or other requirements that a community water system shall follow.

LRAA (Locational Running Annual Average): The average of sample analytical results for samples taken at a particular monitoring location during the previous four calendar quarters. Amount Detected values for TTHMs and HAAs are reported as the highest LRAAs.

MCL (Maximum Contaminant Level): 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.

MCLG (Maximum Contaminant Level Goal): 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.

MRDL (Maximum Residual Disinfectant Level): 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.

MRDLG (Maximum Residual Disinfectant Level Goal): 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.

NA: Not applicable

ND (Not detected): Indicates that the substance was not found by laboratory analysis.

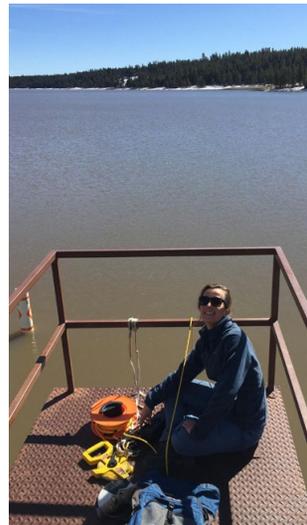
pCi/L (picocuries per liter): A measure of radioactivity.

ppb (parts per billion): One part substance per billion parts water (or micrograms per liter).

ppm (parts per million): One part substance per million parts water (or milligrams per liter).

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

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





PLEASE HELP PREVENT SEWER BLOCKAGES





ONLY flush toilet paper!



No
Wipes, paper towels or napkins



No
Toxic chemicals



No
Feminine hygiene products



No
Pharmaceuticals



No
Kitty litter

"Flushable" wipes do NOT break down like toilet paper. Towels/rags, napkins, wipes & feminine hygiene products cause serious clogs, damage, and other problems at water reclamation plants. Blockages can cause sewer overflows and operational problems, increasing the risk of water service disruptions.

Please do what you can to help keep our water flowing during this health crisis!



Photo credit: Concord General Services, NH



PROTECT OUR WATER: KEEP WIPES OUT OF THE PIPES!

Source Water Assessment

Based on the information currently available on the hydrogeologic settings and the adjacent land uses that are in the specified proximity of the drinking water sources of this public water system, the Arizona Department of Environmental Quality (ADEQ) has given a low risk designation for the degree to which this public water system drinking water sources are protected. A low risk designation indicates that most source water protection measures are either already implemented or the hydrogeology is such that the source water protection measures will have little impact on protection.

The latest ADEQ Source Water Assessment evaluation for Flagstaff's water supply is available for download at www.flagstaff.az.gov/98/Water-Quality.