ANNUAL WATER QUALITY REPORT

WATER TESTING PERFORMED IN 2017

Presented By

Flagstaff Water Services

Este informe contiene información muy importante sobre su agua potable. Tradúzcalo o hable con alguien que lo entienda bien.

PWS ID#: 03008

Continuing Our Commitment

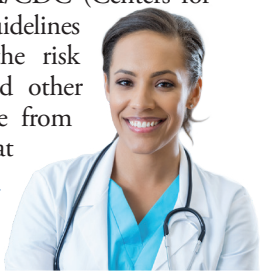
The City of Flagstaff is committed to providing the highest-quality drinking water and reliable delivery to our customers. We are proud to present our annual Consumer Confidence Report, also known as a water quality report, which summarizes all testing conducted to assure we are providing our customers with the highest quality drinking water possible. Our water provided to our customers meets or exceeds all Federal and State drinking water standards. This report covers the period between January 1 and December 31, 2017.

PWS NAME	City of Flagstaff Municipal Water System
PWS ID #	AZ0403008
OWNER/OPERATOR NAME	City of Flagstaff / Brad Hill, R.G, Water Services Director
TELEPHONE	(928) 213-2400
EMAIL	water@flagstaffaz.gov

Important Health Information

While your drinking water meets U.S. EPA's standard for arsenic, it does contain low levels of arsenic. U.S. EPA's standard balances the current understanding of arsenic's possible health effects against the costs of removing arsenic from drinking water. U.S. 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.

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.



Where Does My Water Come From?

In 2017, the Water Services Division produced approximately 8,065 acre-feet (or about 2.6 billion gallons) of drinking water at an average of 7.1 million gallons per day. This is an increase of 1.1% from the previous year, 2016.

The City of Flagstaff produces drinking water from three sources:

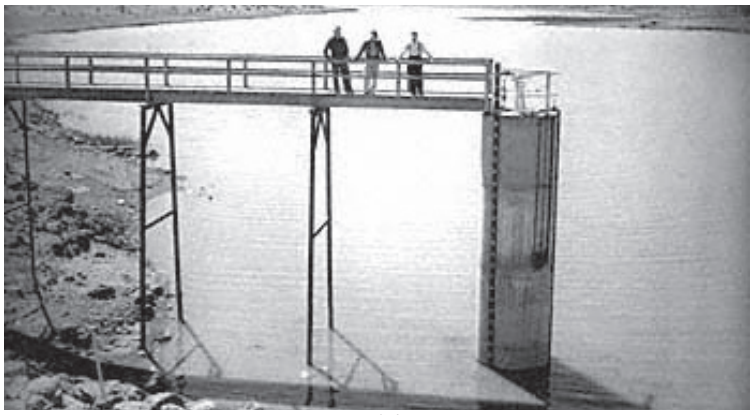
1. Upper Lake Mary
2. Seasonal runoff from the Inner Basin of the San Francisco Peaks. The water is a combination of spring water from snow melt and shallow ground-water wells.
3. Deep groundwater wells located in two wellfields outside of town and seven local wells located inside of town.

Water Treatment Process

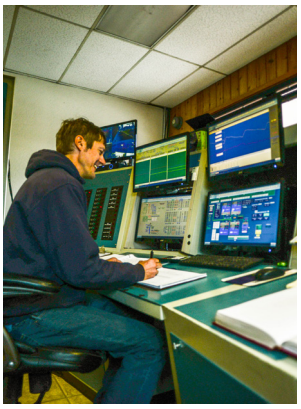
The City of Flagstaff has two water treatment plants:

1. Lake Mary Water Treatment Plant –- Raw water is pumped approximately five miles from an intake tower at the Upper Lake Mary dam to the Lake Mary Water Treatment Plant. Water is treated in a conventional filtration plant, consisting of coagulation, flocculation, sedimentation, filtration, and disinfection. Final treated water is mixed with ground water from the Lake Mary wellfield prior to being pumped to the City's distribution system.
2. 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 ground-water 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.

The City of Flagstaff obtained a Designation of Adequate Water Supply permit from the Arizona Department of Water Resources in 2013. This permit ensures the city has the financial capability to develop necessary infrastructure to meet projected water demands, has obtained water rights to develop its various water supplies, and has a physical water supply available for at least 100 years.



Intake Tower at Lake Mary (c. 1941)



Substances That Could Be in Water

To ensure that tap water is safe to drink, 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 storm-water 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 storm-water 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 storm-water 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.

Public Meetings

We want our valued customers to be informed about their 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 website at www.flagstaff.az.gov/1275/water-services.

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 or at www.epa.gov/safewater/lead.

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, Acting Water Production Manager, at (928) 774-0262.

Flagstaff Water Services Team

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 ADEQ Source Water Assessment evaluation for Flagstaff's water supply can be found by searching "Source Water Assessment" on our website: https://www.flagstaff.az.gov

Lake Mary Water Treatment Plant Sedimentation Basin

Fact or Fiction?

1. Lake Mary is named after the lumber baron Riordan's oldest daughter.
   - **Fact!** The Riordan Brothers originally constructed the dam at Lower Lake Mary in 1905. Now, Upper Lake Mary continues to serve as a reservoir, supplying about 26 percent of the City's water needs. The remainder of City water supply comes from 26 wells located in and around Flagstaff.
2. The highest water use in a residential home is the kitchen, used for cooking and drinking.
   - **Fiction!** Bathrooms account for over 50 percent of all indoor water used in the home, with your toilet taking credit as the highest water-consumer.
3. A 30 drip-per-minute faucet leak can waste up to 75 gallons of water every month.
   - **Fact!** That drip is more than just an annoying sound, it's the sound of money going down your drain.
4. Did you know there is a water cost behind most common goods? For example, one pound of hamburger takes 1,845 gallons of water to produce.
   - **Fact!** For a list of water costs in producing other common items, visit https://water.usgs.gov/edu/activity-watercontent.php.
5. Forest Fires don't endanger our water quality.
   - **Fiction!** Man-made forest fires are the largest threat to the City of Flagstaff and the health of our watershed. Large forest fires can lead to dangerous flooding and sedimentation, affecting surface water reservoirs, such as Upper Lake Mary. The Flagstaff Watershed Protection Program uses controlled burns and selective harvesting of trees to reduce the impact of fire on our watershed.

Test Results

Our water is monitored for many different kinds of substances on a very strict sampling schedule. The information in the data tables shows only those substances that were detected between January 1 and December 31, 2017 (or prior years if sampling for that substance was not required in 2017). Remember that detecting a substance does not necessarily mean the water is unsafe to drink; our goal is to keep all detects below their respective maximum allowed levels.

We participated in the 3rd stage of the EPA's Unregulated Contaminant Monitoring Rule (UCMR3) program by performing additional tests on our drinking water. UCMR3 benefits the environment and public health by providing 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. Contact us for more information on this program.

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)	2017	10	0	7.5	ND–7.5	No	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes
Barium (ppm)	2017	2	2	1.1	0.007–1.1	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Chlorine (ppm)	2017	[4]	[4]	0.69	0.05–1.46	No	Water additive used to control microbes
Chlorine Dioxide (ppb)	2017	[800]	[800]	280	ND–280	No	Water additive used to control microbes
Chlorite (ppm)	2017	1	0.8	0.446	ND–0.446	No	By-product of drinking water disinfection
Chromium (ppb)	2017	100	100	1.4	ND–1.4	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)	2017	4	4	0.1	0.09–0.1	No	Erosion of natural deposits; Water additive, which promotes strong teeth; Discharge from fertilizer and aluminum factories
Haloacetic Acids [HAA] (ppb)	2017	60	NA	19	ND–31	No	By-product of drinking water disinfection
Nitrate (ppm)	2017	10	10	1.9	ND–1.9	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
TTHMs [Total Trihalomethanes] (ppb)	2017	80	NA	32	ND–43	No	By-product of drinking water disinfection
Total Organic Carbon (ppm)	2017	TT	NA	4.4	3.1–4.4	No	Naturally present in the environment
Uranium (ppb)	2017	30	0	1.0	0.9–1.0	No	Erosion of natural deposits

Tap Water Samples Collected for Copper and Lead Analyses from Sample Sites throughout the Community

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AL	MCLG	AMOUNT DETECTED (90TH%TILE)	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

Definitions

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).

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

UNREGULATED SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
Sodium (ppm)	2017	5.3	2.2–5.3	Erosion of natural deposits

UNREGULATED CONTAMINANT MONITORING RULE - PART 3 (UCMR3)

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH
1,4-Dioxane (ppb)	2014	0.52	ND–0.52
Chlorate (ppb)	2013	54	38–54
Chromium (Total) (ppb)	2014	2.7	0.33–2.7
Chromium-6 (ppb)	2014	2.2	0.05–2.2
Strontium (ppb)	2014	140	29–140
Vanadium (ppb)	2014	5.7	0.61–5.7

> Water treatment is a complex, time-consuming process.