

2006 Water Quality Test Results

Unless noted otherwise, the test results cover the period of January 1 to December 31, 2006.

Table 1 describes test results from McAllister Springs which is designated as a surface water source due to the pond that surrounds the springs (see photo).

TABLE 1 - McAllister Springs (Surface Water) Before Chlorination

Contaminant (units)	MCL	MCLG	McAllister Springs Water Amount Detected	Range of Results (Low - High)	Testing Frequency	Typical Source of Contamination
Cryptosporidium	N/A	N/A	Zero	N/A	Once a month	Fecally contaminated water
Giardia Lamblia	99.9% removal	N/A	Zero	N/A	Once a month	Fecally contaminated water
Fecal Coliform Bacteria (# of bacteria per 100 milliliters of water)	90% of samples had fewer than 20 bacteria per 100 milliliters of water	Zero	100% of samples had fewer than 20 bacteria per 100 milliliters of water	0-4 organisms	5 times a week	Fecally contaminated water
Total Coliform Bacteria (# of bacteria per 100 milliliters of water)	90% of samples must have fewer than 100 bacteria per 100 milliliters of water	Zero	100% of samples had fewer than 100 bacteria per 100 milliliters of water	0-95 organisms	5 times a week	Soil bacteria and fecally contaminated water
Turbidity (NTU)	5 NTU	1 NTU	0.033-0.520 NTU	0.033-0.520 NTU	Metered continuously	Soil runoff



McAllister Springs Pump House

Table 2 shows that we provide safe drinking water with minimal disinfection by-products. All of our water is treated with chlorine. We use the minimum amount necessary to properly disinfect our drinking water.

TABLE 2 - Water Distribution System After Chlorination

Contaminant (units)	MCL	MCLG	City of Olympia Water Amount Detected	Range of Results (Low - High)	Testing Frequency	Typical Source of Contamination
Total Coliform Bacteria	95% of samples must have zero detections	Zero	No samples had confirmed detections	Zero	60 times per month at a minimum	Soil bacteria and fecally contaminated water
Chlorine residual (ppm)	4.0 ppm	Detectable amount of 0.05 ppm	0.13 - 0.83 ppm	0.13 - 0.83 ppm	Metered continuously	Chlorine is used as a disinfectant in the water treatment process
Disinfection By-Products						
Halooacetic Acids (HAA) (ppb)	60 ppb	Zero	1.1 ppb	0.0 - 1.1 ppb	Quarterly	Disinfection by-products are caused by a chemical reaction between chlorine and naturally occurring organic matter in water
Total Trihalomethanes (THM) (ppb)	80 ppb	Zero	5.7 ppb	0 - 5.7 ppb		

Table 3 shows very low levels of lead and copper. We've kept levels low by using air strippers as a treatment technique.

TABLE 3 - Lead & Copper Results from 2006 (taken at customer tap)

Contaminant (units)	MCL	Olympia Water Amount Detected	Number of sites found above the AL	Range of Results (Low - High)	Testing Frequency	Typical Source of Contamination
Copper (ppm)	Action Level (AL) 1.3 ppm	90% of the homes tested had copper levels less than 0.985 ppm	Zero sites above AL out of 35 sites sampled	0.059-1.2 ppm	Once every 3 years	Corrosion of household plumbing
Lead (ppb)	Action Level (AL) 15 ppb	90% of the homes tested had lead levels less than 3 ppb	Zero sites above AL out of 35 sites sampled	<2-5 ppb	Once every 3 years	Corrosion of household plumbing

Action Level for Copper: 90% of the homes tested must have levels less than 1.3 ppm detected
Action Level for Lead: 90% of the homes tested must have levels less than 15 ppb detected

Glossary of Water Quality Terms

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

Giardia lamblia: Giardia is a one-celled parasite that can cause a gastrointestinal illness called giardiasis.

Cryptosporidium: Cryptosporidium is a one-celled parasite that can cause a gastrointestinal illness called cryptosporidiosis.

Fecal Coliform Bacteria: Fecal Coliform bacteria can cause gastrointestinal illness. It is a sub-group of total coliform bacteria.

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. MCLG allows for a margin of safety.

Milliliter: Measures a volume of water. For example, 100 milliliters equals approximately 1/2 cup.

Nephelometric Turbidity Unit (NTU): Unit by which turbidity is measured.

Parts per billion (ppb): Parts per billion is a unit of measurement. One part per billion is equivalent to about one dissolved aspirin tablet (or 326 mg) in a 2.5-meter swimming pool (about 100,000 gallons).

Parts per million (ppm): Parts per million is a unit of measurement. One part per million is equivalent to about half of a dissolved aspirin tablet (or 162 mg) in a full bathtub of water (about 50 gallons). This unit is interchangeable with milligrams per liter (mg/l).

Total Coliform Bacteria: Total Coliform is a measure of different kinds of coliform bacteria. Water quality staff use this as a first indicator of potential disease-causing organisms in water.

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

Turbidity: Turbidity measures the cloudiness of water and is a good indicator of water quality.

Arsenic

Arsenic occurs in groundwater from both natural sources and human activities, like runoff from orchards or glass and electronic production wastes. In 2006 we had a detect of 2 ppb at McAllister Springs. This is below the MCL of 10 ppb. Our low levels are thought to be attributed to geologic formation rather than human activities. Arsenic can have adverse health effects at levels above allowable limits.

Monitoring for Radionuclides

Erosion of natural deposits containing radon, radium, or uranium causes Radionuclide contamination. In 2005 the City sampled for Radium 228, which is a contaminant of the Radionuclides. We received the test result from the laboratory in January 2007 which showed no detections for Radionuclides at our wells.

Nitrates at Shana Park Well 11

Over the past six years, we've noticed nitrate levels rising at Shana Park Well 11. These levels are still below State and Federal maximum contaminant levels and the water is safe to drink.

Source	Nitrate Results
McAllister Springs	2.66 ppm
Allison Well 13	1.19 ppm
Allison Well 19	1.07 ppm
Shana Park Well 11	4.0 ppm
Hoffman Well	<0.1 ppm
Kaiber Well	0.90 ppm

Nitrate MCL 10 ppm, MCLG 5 ppm

The City of Olympia has applied for a Centennial Clean Water Fund Grant to conduct extensive education and groundwater monitoring in order to address nitrate contamination in Well 11. The project will focus on lawn fertilizing and irrigation practices. Work related to the grant will begin in late 2007 and will continue through early 2012.

Olympia's water met or exceeded all State and Federal drinking water standards in 2006.



We have great quality water in our community and we want to keep it that way. Preventing contamination of groundwater is the best way to ensure we have safe and sustainable water for generations to come.

To protect our water sources, we first have to identify risks to groundwater quality. Listed to the right are risks near our water sources from both rural and urban activities.

Risks include:

- Use, storage, and disposal of hazardous materials
- Leaking underground storage tanks
- Transportation spills
- Stormwater runoff
- Animal wastes
- Septic systems
- Abandoned wells
- Existing and abandoned landfills
- Pesticides and fertilizers
- Seawater intrusion

Keep Groundwater Clean

- Use slow-release or organic fertilizers and non-toxic pest control methods on your lawn and garden.
- Your lawn only needs one inch of water a week, including rainfall, to stay green and healthy.
- Store household hazardous products, such as paint thinner, gasoline, or pesticides, in leak-proof containers.
- Take unwanted household hazardous products to HazoHouse at the Hawks Prairie Waste and Recovery Center.
- Inspect and pump your septic system every 3 – 5 years.

Prevent Cross Connections

A cross connection is a connection between a drinking water pipe and a source of contamination. An example is a sprayer that connects to the end of your garden hose to spray pesticides or fertilizers on your lawn or garden. If the water pressure drops at the same time you turn on the hose, the contaminant could be drawn back into the hose and into the City's water system. This is called backflow. You can protect your drinking water from backflow by installing a backflow prevention device.

As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material. The water can also pick up substances resulting from animal or human activity.

Contaminants that may be present in drinking water sources include:

Microbial contaminants include viruses, parasites and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.

Pesticides and herbicides 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 are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.

Radioactive contaminants can be

naturally occurring or be the result of oil and gas production and mining activities.

Important Health Information

Vulnerable? Seek Medical Advice

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons, such as a person 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.

Reduce Your Risk of Infection

Environmental Protection Agency (EPA)/Center for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the EPA Safe Drinking Water Hotline (1-800-426-4791).

The Washington Department of Health has a summary of the City of Olympia's susceptibility to contamination, including maps of our Drinking Water Protection Areas at <https://fortress.wa.gov/doh/eh/dwi/swap/>