



ANNUAL
WATER REPORT

*Water testing
performed in 2010*

Presented By
Reading Area Water Authority

Quality First

Once again we are proud to present our annual water quality report covering all testing performed between January 1 and December 31, 2010. As in years past, we are committed to delivering the best-quality drinking water possible. To that end, we remain vigilant in meeting the challenges of new regulations, source water protection, water conservation, and community outreach and education while continuing to serve the needs of all of our water users. Thank you for allowing us to continue providing you and your family with quality drinking water.

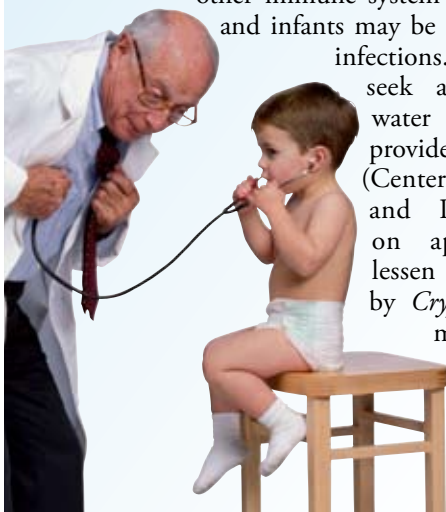
We encourage you to share your thoughts with us on the information contained in this report. Should you ever have any questions or concerns, we are always available to assist you.

Community Participation

You are invited to participate in our public forum and voice your concerns about your drinking water. We meet the last Thursday of each month at 4:00 p.m. at City Hall, Penn Room, 815 Washington Street, Reading, Pennsylvania.

Important Health Information

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/>.



Substances That Could Be in Water

To ensure that tap water is safe to drink, the U.S. EPA 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, which must provide the same protection for public health. 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. Substances 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.

For more information about contaminants and potential health effects, call the U.S. EPA's Safe Drinking Water Hotline at (800) 426-4791.

Source Water Assessment

Four watershed studies indicate the following key concerns:

1. Bacterial contamination of water sources by animal and human fecal material.
2. Sediment delivery to the reservoir has reduced the capacity of the lake by roughly 10 percent of its volume.
3. Algae growth fueled by phosphorus transported to the lake via sedimentation.

Although the Reading Area Water Authority is concerned with protecting its sources of water, current treatment processes are capable of transforming raw water, from the lake, into finished water that meets all federal and state drinking water standards. A watershed committee has been formed to address the above concerns. To view a copy of the source water assessment, contact Dean A. Miller, Reading Area Water Authority, at (610) 655-6252.

Fact or Fiction

There is the same amount of water on Earth now as there was when the Earth was formed. *(Fact: The water that comes from your faucet could contain molecules that dinosaurs drank!)*

About half the water treated by public water systems is used for drinking and cooking. *(Fiction: Actually, the amount used for cooking and drinking is less than 1 percent of the total water produced!)*

A person can live about a month without food, but only about a week without water. *(Fact: Dehydration symptoms generally become noticeable after only 2 percent of one's normal water volume has been lost.)*

The first water pipes in the United States were made of cast iron. *(Fiction: The first water pipes were actually made of fire-charred bored logs.)*

The world's first municipal water filtration plant was opened in the United States. *(Fiction: The first plant was actually opened in Paisley, Scotland, in 1832.)*

A person must consume a half-gallon of water daily to live healthily. *(Fact: A person should drink at least 64 ounces, or 8 cups, of water each day.)*

Lead and Drinking 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. Reading Area Water Authority 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 www.epa.gov/safewater/lead.

Where Does My Water Come From?

Reading Area Water Authority customers are fortunate because they enjoy an abundant water supply from Lake Ontelaunee. Owned exclusively by the city, it is located on Route 73, six miles north of the city limits. The lake is a 1,083-acre, man-made lake with a 192-square-mile-watershed area. A minimum width of 500 feet of marginal sanitary strip surrounds the lake, with a total of 3,142.5 acres. This strip was acquired to minimize pollution entering the lake from the shorelines. Lake Ontelaunee was formed when a dam was constructed in 1926. The lake was raised to its present height in 1935. The lake has a capacity of 3.88 billion gallons. The raw water from the lake is delivered, by gravity, through a conduit, to the Maiden Creek Filter Plant. The filter plant also has the capacity to draw water from the Maiden Creek. This creek passes by the filter plant about two miles downstream of the dam. The Maiden Creek Filter Plant was constructed in 1934. Presently, our treatment facilities provide roughly 5.1 billion gallons of clean drinking water every year.

Questions?

For more information about this report, or for any questions relating to your drinking water, please call Dean A. Miller, Reading Area Water Authority, at (610) 655-6252.



Why do I get this report each year?

Community water system operators are required by federal law to provide their customers with an annual water quality report. The report helps people make informed choices about the water they drink. It lets people know what contaminants, if any, are in their drinking water and how these contaminants may affect their health. It also gives the system operators a chance to tell customers what it takes to deliver safe drinking water.

Why does my water sometimes look “milky”?

The “milky” look is caused by tiny air bubbles in the water. The water in the pipes coming into your home or business might be under a bit of pressure, and gasses (the air) are dissolved and trapped in the pressurized water as it flows into your glass. As the air bubbles rise in the glass, they break free at the surface, thus clearing up the water. Although the milky appearance might be disconcerting, the air bubbles won't affect the quality or taste of the water.

How can I keep my pet's water bowl germ free?

Veterinarians generally recommend that water bowls be washed daily with warm, soapy water – normally when you change the water. Scour the corners, nooks, and crannies of the water dish using a small scrub brush. In addition, once a week put water bowls into the dishwasher to sanitize them with hot water. In most situations, disinfectants like bleach are not needed; warm, soapy water is all you need to keep your pet's water clean and safe.

How much water is used during a typical shower?

The Federal Energy Policy Act set a nationwide regulation that limits showerheads to a maximum flow of 2.5 gallons per minute (GPM). Showerheads made before 1980 are rated at 5 GPM. Since the average shower is estimated to last 8.2 minutes, the old showerheads use 41 gallons of water, while the newer, low-flow showerheads use only about 21 gallons.

How Is My Water Treated and Purified?

The treatment method adopted by the plant is called conventional, which is the most efficient and commonly used method. In this method, a chemical coagulant, e.g., aluminum sulfate or ferric chloride, is added to the water to convert the undesirable materials to solid particles so they can be separated from the water by gravity. The finer remaining particles, which are slow to settle out, are then removed by filtration.

Raw water flows to the treatment plant, where it passes through a bar screen to remove any plant debris and other large objects. Then optimum doses of the following chemicals are added to the water in the following order:

1. Chlorine: to eliminate bacterial and algae growth throughout the treatment plant.
2. Aluminum sulfate or alum: to coagulate undesirable materials.
3. Potassium permanganate: to aid in the removal of manganese and reduce undesirable tastes and odors of the water.
4. Powdered activated carbon or charcoal: to eliminate undesirable tastes and odors.

After these chemicals are mixed with the water, it flows through a set of flocculation channels that force the large particles to settle to the bottom. The water then flows slowly into three large sedimentation basins and is allowed to stay for six to ten hours at a state of quiescence, to settle the solid particles. The remaining microscopic floc particles are then removed by eight large filters. They are capable of removing materials as low as molecular in size. The filters are huge concrete boxes, 12 feet deep, containing, from the top to the bottom, 37 inches of large-to-fine gravel, fine garnet sand, silica sand, and fine anthracite coal.

The filtered water is then treated with the following chemicals as the final treatment step:

1. Caustic Soda: to adjust pH and alkalinity of water to a healthy level and also reduce potential corrosivity of water on the distribution pipes.
2. Sodium Fluorosilicate: to provide fluoride concentrations in the distribution system.
3. A mixture of orthophosphates to reduce corrosion in the water pipes.
4. Chlorine: to maintain a residual disinfectant in the distribution system.

The treated water then flows into a water storage tank before being pumped to your residence.

Sampling Results

During the past year, we have taken hundreds of water samples in order to determine the presence of any radioactive, biological, inorganic, volatile organic, or synthetic organic contaminants. The table below shows only those contaminants that were detected in the water.

The state requires us to monitor for certain substances less 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.

REGULATED SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Chlorine [Distribution System] (ppm)	2010	[4]	[4]	1.84 ¹	1.09–1.84	No	Water additive used to control microbes
Fluoride (ppm)	2010	2	2	1.38	0.77–1.38	No	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories
Haloacetic Acids [HAA] ² (ppb)	2010	60	NA	8	5–9	No	By-product of drinking water disinfection
Nitrate (ppm)	2010	10	10	3.80	1.83–3.80	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
TTHMs [Total Trihalomethanes] ² (ppb)	2010	80	NA	10	7–18	No	By-product of drinking water disinfection
Total Organic Carbon ³ (ppm)	2010	TT	NA	1.9	0.8–1.9	No	Naturally present in the environment

Entry Point Disinfectant Residual

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MINIMUM DISINFECTANT RESIDUAL	LOWEST LEVEL DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Chlorine (ppm)	January 2010	0.2	0.65	0.65–3.49	No	Water additive used to control microbes

Microbiological

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Total Coliform Bacteria (% positive samples)	2010	5% positive monthly samples	0	4.44	NA	No	Naturally present in the environment

Turbidity

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Turbidity ⁴ (NTU)	2010	TT	NA	0.173	0.026–0.173	No	Soil runoff
Turbidity (Lowest monthly percent of samples meeting the standard)	2010	TT	NA	100.0	NA	No	Soil runoff

Definitions

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

GW: Groundwater source.

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.

MinRDL (Minimum Residual Disinfectant Level): The minimum level of residual disinfectant required at the entry point to the distribution system.

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.

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

SUBSTANCE (UNIT OF MEASURE)	DATE SAMPLED	AL	MCLG	AMOUNT DETECTED (90TH%TILE)	SITES ABOVE AL/TOTAL SITES	VIOLATION	TYPICAL SOURCE
Copper (ppm)	June 2010	1.3	1.3	0.244	0/38	No	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives
Lead (ppb)	June 2010	15	0	1.2	0/38	No	Corrosion of household plumbing systems; Erosion of natural deposits

UNREGULATED CONTAMINANT MONITORING REGULATION – CYCLE 2 (UCMR2)⁵

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
N-nitrosodimethylamine [Distribution System] (ppb)	2008	0.0083	0.0039–0.0083	By-product of drinking water chlorination
N-nitrosodimethylamine [Entry Point] (ppb)	2008	0.0087	0.0022–0.0087	By-product of drinking water chlorination

¹ Highest average monthly residual value.

² For HAAs and TTHMs, the amount detected is the highest running annual average and the range is based on a quarterly average.

³ Percent removal range required for TOC is 0–35 percent. The percent removal achieved by Reading Area Water Authority in 2010 was 38–61 percent.

⁴ Turbidity is a measure of the cloudiness of the water. We monitor it because it is a good indicator of the effectiveness of our filtration system.

⁵ The purpose of UCMR2 is to “collect occurrence data for contaminants suspected to be present in drinking water, but do not have health-based standards set under the Safe Drinking Water Act.” Quarterly monitoring of the finished water, performed in March, June, September, and December of 2008 showed the presence of a nitrosamine: N-nitrosodimethylamine (NDMA).

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.

NTU (Nephelometric Turbidity Units): Measurement of the clarity, or turbidity, of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

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).

SW: Surface water source.

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