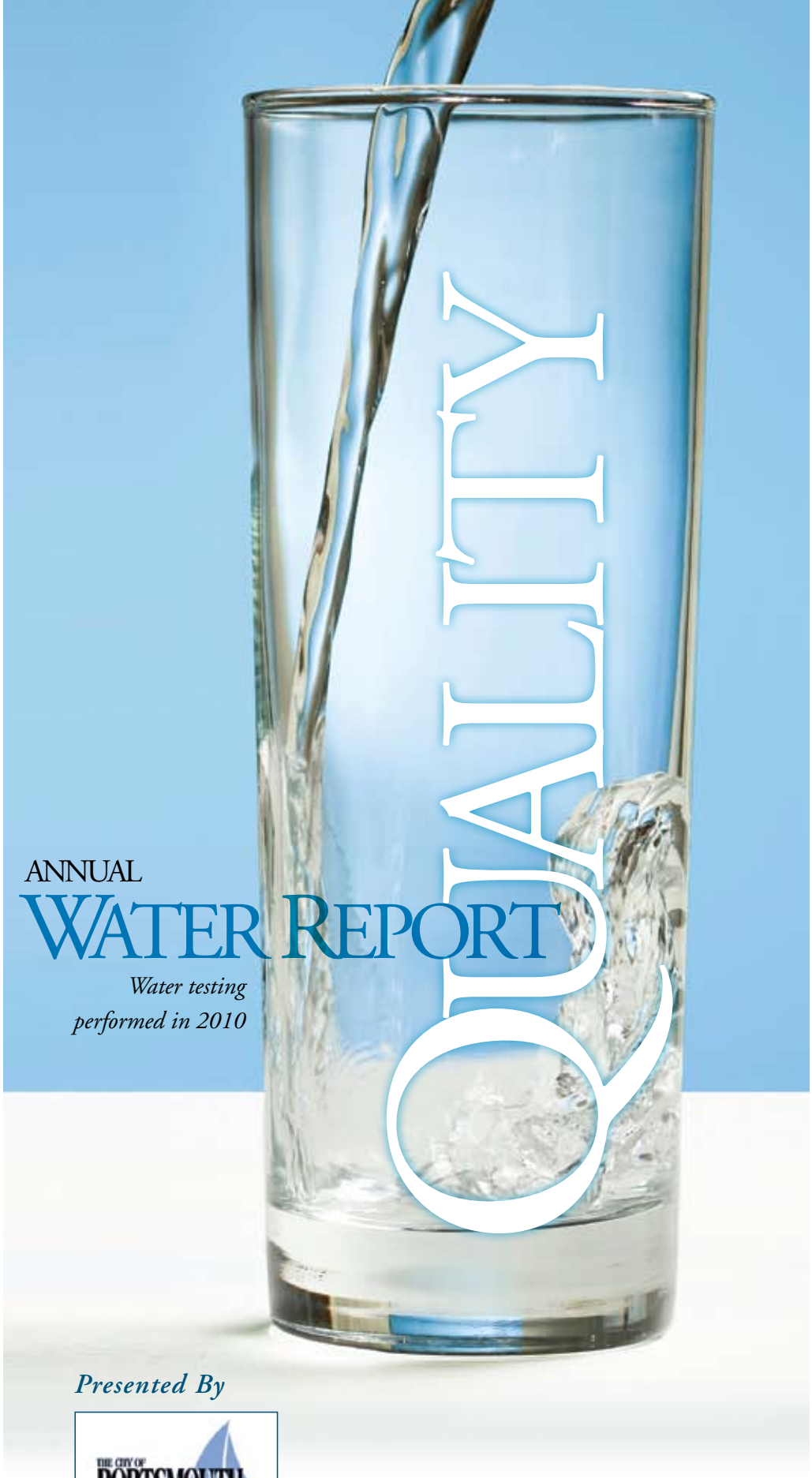


ANNUAL

WATER REPORT

Water testing performed in 2010

QUALITY

Presented By

THE CITY OF PORTSMOUTH

PWS ID#: 3740600

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 high-quality drinking water.

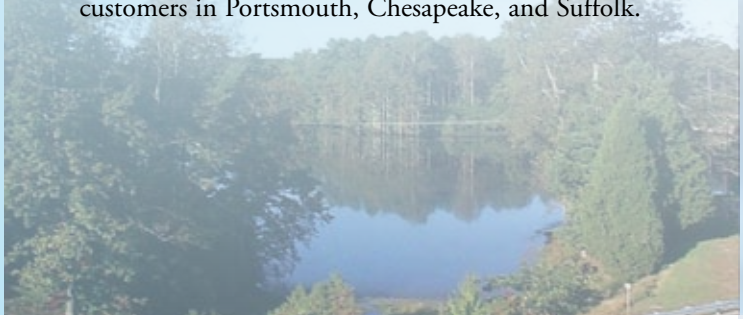
We encourage you to share your thoughts with us on the information contained in this report. Should you ever have any questions or concerns, we are always available to assist you.

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 www.epa.gov/drink/hotline/.

Source Water Description

Your tap water comes both from surface lakes (Lake Meade) and from deep wells (5). Portsmouth's water treatment facility has the capacity to treat 33 million gallons of water each day and serves over 120,000 customers in Portsmouth, Chesapeake, and Suffolk.



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.

Naturally Occurring Bacteria

The simple fact is, bacteria and other microorganisms inhabit our world. They can be found all around us: in our food; on our skin; in our bodies; and in the air, soil, and water. Some are harmful to us and some are not. Coliform bacteria are common in the environment and are generally not harmful themselves. The presence of this bacterial form in drinking water is a concern because it indicates that the water may be contaminated with other organisms that can cause disease. Throughout the year, we tested many water samples for coliform bacteria. In that time, none of the samples came back positive for the bacteria. Federal regulations require that public water that tests positive for coliform bacteria must be further analyzed for fecal coliform bacteria. Fecal coliform are present only in human and animal waste. Because these bacteria can cause illness, it is unacceptable for fecal coliform to be present in water at any concentration. Our tests indicate no fecal coliform is present in our water.

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. The Lake Kilby Water Treatment Plant is 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. 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.

What Causes the Pink Stain on Bathroom Fixtures?

The reddish-pink color frequently noted in bathrooms on shower stalls, tubs, tile, toilets, sinks, toothbrush holders and on pets' water bowls is caused by the growth of the bacterium *Serratia marcesens*. Serratia is commonly isolated from soil, water, plants, insects, and vertebrates (including man). The bacteria can be introduced into the house through any of the above mentioned sources. The bathroom provides a perfect environment (moist and warm) for bacteria to thrive.

The best solution to this problem is to continually clean and dry the involved surfaces to keep them free from bacteria. Chlorine-based compounds work best, but keep in mind that abrasive cleaners may scratch fixtures, making them more susceptible to bacterial growth. Chlorine bleach can be used periodically to disinfect the toilet and help to eliminate the occurrence of the pink residue. Keeping bathtubs and sinks wiped down using a solution that contains chlorine will also help to minimize its occurrence.

Serratia will not survive in chlorinated drinking water.

Source Water Assessment

A Source Water Assessment Plan (SWAP) is available at our watershed office, (757) 539-2201 x222. This plan is an assessment of the delineated area around our listed sources through which contaminants, if present, could migrate and reach our source water. It also includes an inventory of potential sources of contamination within the delineated area, and a determination of the water supply's susceptibility to contamination by the identified potential sources.

According to the Source Water Assessment Plan, our water system had a susceptibility rating of "medium." If you would like to review the Source Water Assessment Plan, please feel free to contact our office during regular office hours.

For More Information

At the City of Portsmouth Department of Public Utilities, we value our customers and work hard to ensure your satisfaction. If you have questions or comments about this report or other issues concerning water quality, please call us or the other sources of water quality information listed below:

City of Portsmouth
Water Quality Desk
(757) 539-2201 x232

Additional sources of information regarding water quality may be found at:

Virginia Department of Health
Office of Water Programs
(757) 683-2000

U.S. Environmental Protection Agency Safe Drinking Water Hotline

1-(800) 426-4791 or
http://water.epa.gov/drink/hotline

This Water Quality Report as well as information about other City issues can also be viewed at our Web site. Please visit us at www.portsmouthva.gov.

Why do I get this report each year?

Community water system operators are required by Federal law to provide their customers 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 will be under pressure so 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 shower heads to a maximum flow of 2.5 gallons per minute (GPM). Shower heads made before1980 are rated at 5 GPM. Since the average shower is estimated to last 8.2 minutes, the old shower heads use 41 gallons of water while the newer, low-flow shower heads use only about 21 gallons.

Is it okay to use hot water from the tap for cooking and drinking?

No, ALWAYS use cold water. Hot water is more likely to contain rust, copper, and lead from household plumbing and water heaters. These substances can dissolve into hot water faster than they do into cold water, especially when the faucet has not been used for an extended period of time.

How many contaminants are regulated in drinking water?

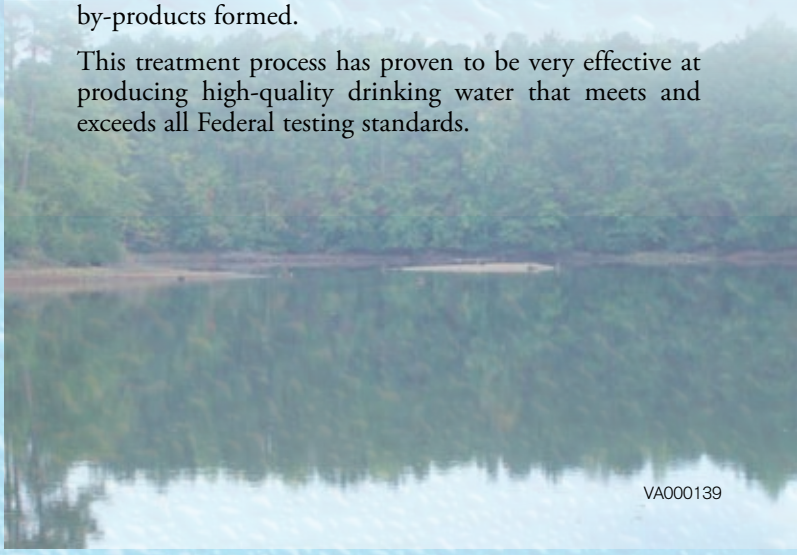
The U.S. EPA regulates over 80 contaminants in drinking water. Some states may choose to regulate additional contaminants or to set stricter standards, but all states must have standards at least as stringent as the U.S. EPA's.

Water Treatment Process

The treatment process consists of a series of steps. First, water is drawn from our lakes at various intakes. It is here where oxidation takes place. We use permanganate to oxidize the source water for iron and manganese removal. In addition, this chemical helps with taste and odor caused by naturally occurring organic matter found in the source water. The water then goes through a rapid mix where a coagulant, aluminum sulfate, is added. The addition of this substance initiates the coagulation process. Coagulation is the process that causes very small suspended particles to attract one another and form larger particles accomplished by the addition of a chemical.

The water is then sent to a contact basin where caustic soda is added for pH control. From there the water is sent to the clarifiers. At the head of each clarifier, polymer and carbon are added, initiating the flocculation process. The flocculation process converts small suspended particles into larger, more settleable clumps, referred to as floc. The clarifiers act as large settling basins in which water is retained to allow the floc to settle out by gravity. The water is then sent to multimedia filters for filtration and where liquid chlorine is added for disinfection. Fluoride is added by the addition of well water that has naturally occurring levels of fluoride. Finally the water is pumped to one of two clear well holding tanks where ammonia is added before pumping to the distribution system. The ammonia is added to the chlorinated water to form chloramines, which maintain a longer residual life in the distribution and reduce the amount of disinfection by-products formed.

This treatment process has proven to be very effective at producing high-quality drinking water that meets and exceeds all Federal testing standards.



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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 tables below show only those contaminants that were detected in the water. The state requires us to monitor 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.

REGULATED SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Barium (ppm)	2010	2	2	0.026	NA	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Beta/Photon Emitters[1] (pCi/L)	2010	50	0	2.7	NA	No	Decay of natural and man-made deposits
Fluoride (ppm)	2010	4	4	0.68	0.64–1.52	No	Erosion of natural deposits; Water additive that promotes strong teeth; Discharge from fertilizer and aluminum factories
Haloacetic Acids [HAA] (ppb)	2010	60	NA	32	30–33	No	By-product of drinking water disinfection
Nitrate (ppm)	2010	10	10	0.15	NA	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
TTHMs [Total Trihalomethanes] (ppb)	2010	80	NA	43	42–44	No	By-product of drinking water disinfection
Total Organic Carbon (ppm)	2010	TT	NA	2.67	1.92–3.18	No	Naturally present in the environment
Turbidity[2] (NTU)	2010	TT=1	NA	0.10	0.06–0.10	No	Soil runoff
Turbidity (Lowest monthly percent of samples meeting limit)	2010	TT=95% of samples<0.3 NTU	NA	100	NA	No	Soil runoff

Tap water samples were collected for lead and copper analyses from sample sites throughout the community. Lead was not detected at the 90th percentile.

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AL	MCLG	AMOUNT DETECTED (90TH%TILE)	SITES ABOVE AL/TOTAL SITES	VIOLATION	TYPICAL SOURCE
Copper (ppm)	2009	1.3	1.3	0.181	0/65	No	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives

Definitions

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

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. Secondary MCLs (SMCL) are set for the control of taste and odor.

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

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.

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

SECONDARY SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	SMCL	MCLG	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Chloride (ppm)	2010	250	NA	16	NA	No	Runoff/leaching from natural deposits
Color (Units)	2010	15	NA	5	NA	No	Naturally occurring organic materials
pH (Units)	2010	6.5–8.5	NA	7.4	7–7.9	No	Naturally occurring
Sulfate (ppm)	2010	250	NA	44	NA	No	Runoff/leaching from natural deposits; Industrial wastes
Total Dissolved Solids [TDS] (ppm)	2010	500	NA	183	NA	No	Runoff/leaching from natural deposits

OTHER SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
Alkalinity (ppm)	2010	70	59–109	Naturally present in the environment
Calcium Hardness (ppm)	2010	18.0	15.0–27.0	Hardness is generally caused by the presence of calcium and magnesium ions in water.
Hardness	2010	22	16–32	Hardness is generally caused by the presence of calcium and magnesium ions in water.
Ortho-phosphate (ppm)	2010	0.07	NA	NA
Silica (Reactive)	2010	3	NA	Naturally present in the environment

[1] The MCL for beta particles is 4 mrem/year. The U.S. EPA considers 50 pCi/L to be the level of concern for beta particles.
[2] Turbidity is a measure of the cloudiness of the water. We monitor it because it is a good indicator of the effectiveness of the filtration system.

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.