ANNUAL WATER QUALITY REPORT

Water Testing Performed in 2018

Presented By THE CITY OF PORTSMOUTH℠

PWS ID#: 3740600

Our Mission Continues

We are pleased to present our annual water quality report covering all testing performed between January 1 and December 31, 2018. Over the years, we have dedicated ourselves and taken pride in producing the best drinking water quality that meets all state and federal standards. We continually strive to adopt new methods for delivering the very 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.

Source Water Description

Your tap water comes from four surface lakes -- Lake Meade, Cohoon, Speight's Run, and Lake Kilby -- and five deep wells. Portsmouth's water treatment facility has the capacity to treat 32 million gallons of water each day and serves over 150,000 customers in Portsmouth, Chesapeake, and Suffolk.

Important Health Information

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons such as those with cancer undergoing chemotherapy, those 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.

Water Treatment Process

Water from the lakes owned by the City of Portsmouth is carefully treated and prepared for safe drinking and other uses by our customers. The treatment process consists of a series of several steps. The initial treatment step involves introducing and mixing additives to convert dissolved substances in the lake water to particles that can be easily removed from the water. This process forms particles (called floc) to attract one another and form larger particles for further treatment.

Next treatment step is to separate and remove the formed particles from the water. This is done by using a gravity settling process during which most of the particles are removed. The few particles remaining after the gravity settling process are removed in filter beds consisting of various sizes of granular media consisting of anthracite coal and silica sand. There the particles attach to the filter media and are removed from the water flow stream. Chlorine is also added prior to filtration to begin the disinfection of the water, inactivating pathogenic microbes and also aiding in the removal of dissolved iron and manganese in the water.

Finally, several additives are introduced into the filtered water to further prepare the water for safe drinking and other uses. Well water is added for the naturally occurring levels of fluoride to aid in oral health. Ammonia is added to the chlorinated water to form chloramines, which maintain a longer-lasting residual in the distribution system to keep pathogenic microbials at bay and reduce the amount of by-products formed by the disinfection process. A corrosion-inhibiting substance is also added to minimize the natural corrosive effect that water has on metallic pipe materials.

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

Source Water Assessment

The Source Water Assessment Plan (SWAP) is available at our watershed office; call (757) 539-2201, ext. 222. The SWAP 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.

The state drinking water program has found that our drinking water is potentially most susceptible to agriculture, urban, and forestry runoff. However, we have not detected any contaminants from these sources in our drinking water.

Information on the Internet

The U.S. EPA (https://goo.gl/TFAMKc) and the Centers for Disease Contol and Prevention (www.cdc.gov) websites provide a substantial amount of information on many issues relating to water resources, water conservation, and public health. Also, the Virginia Department of Health, Office of Drinking Water, has a website (https://goo.gl/3Tn805) that provides complete and current information on water issues in Virginia, including valuable information about our watershed.

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 that 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.

> "We remain vigilant in delivering the best-quality drinking water"

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.

Lead in Home Plumbing

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. 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 at (800) 426-4791 or atwww.epa.gov/safewater/lead

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
Laboratory Water Quality

(757) 539-2201, ext 235

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's Safe Drinking Water Hotline

(800) 426-4791

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

Test Results

Our water is monitored for many different kinds of substances on a very strict sampling schedule. The water we deliver must meet specific health standards. Here, we show only those substances that were detected in our water between January 1 and December 31, 2018. 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 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
Barium (ppm)	2018	2	2	0.024	NA	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Chloramines (ppm)	2018	[4]	[4]	3.62	1.04–4.1	No	Water additive used to control microbes
Fluoride (ppm)	2018	4	4	0.73	0.48–1.16	No	Erosion of natural deposits; Water additive that promotes strong teeth; Discharge from fertilizer and aluminum factories
Haloacetic Acids [HAAs] (ppb)	2018	60	NA	36	16–42	No	By-product of drinking water disinfection
TTHMs [Total Trihalomethanes] (ppb)	2018	80	NA	43	24–44	No	By-product of drinking water disinfection
Total Organic Carbon[1] (ppm)	2018	TT	NA	2.13	1.78–2.58	No	Naturally present in the environment
Turbidity[2] (NTU)	2018	TT	NA	0.13	0–0.13	No	Soil runoff
Turbidity (Lowest monthly percent of samples meeting limit)	2018	TT = 95% of samples meet the limit	NA	100	NA	No	Soil runoff

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)	2018	1.3	1.3	0.194	0/60	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead (ppb)	2018	15	0	2	1/60	No	Corrosion of household plumbing systems; Erosion of natural deposits

SECONDARY SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	SMCL	MCLG	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Sulfate (ppm)	2018	250	NA	52	10–66	No	Runoff/leaching from natural deposits; Industrial wastes
Total Dissolved Solids [TDS] (ppm)	2018	500	NA	224	NA	No	Runoff/leaching from natural deposits
pH (Units)	2018	6.5–8.5	NA	7.45	7–7.8	No	Naturally occurring

UNREGULATED AND OTHER SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
Alkalinity (ppm)	2018	76	62–108	Naturally occurring
Calcium Hardness (ppm)	2018	21	18–28	Naturally present in sedimentary rocks
Conductivity µS/cm	2018	331	262–370	Naturally occurring
Corrosion Index (Langlier) (units)	2018	-1.36	-1.84–-0.89	Naturally or industrially influenced balance of hydrogen, carbon, and oxygen inthe water; Affected by temperature and other factors
Ortho-Phosphate (ppm)	2018	0.34	0.21–0.70	Naturally occurring in rocks and other minerals
Sodium (ppm)	2018	60	NA	Naturally occurring

UNREGULATED CONTAMINANT MONITORING RULE - PART 4 (UCMR4)

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
Bromide (ppb)	2018	33.86	26.4–33.4	Usually found in pesticides and some baked goods
HAA5 (ppb)	2018	27.12	17.44–36.85	By-product of drinking water disinfection
HAA6Br (ppb)	2018	8.87	5.98–12.21	By-product of drinking water disinfection
HAA9 (ppb)	2018	35.71	24.12–47.76	By-product of drinking water disinfection
Manganese (ppb)	2018	0.788	0.562–0.942	Naturally occurring
Quinoline (ppb)	2018	0.0419	NA	Typically found in cocoa, black teas, and certain types of alcohols
Total Organic Carbon [TOC] (ppb)	2018	7,868	6,000–10,500	Naturally occurring

[1] The 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.
[2] Turbidity is a measure of the cloudiness of the water. It is monitored because it is a good indicator of the effectiveness of the filtration system.

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 water system must follow.

µS/cm (microsiemens per centimeter): A unit expressing the amount of electrical conductivity of a solution.

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

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.

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.