CITY OF ANNAPOLIS
2015 ANNUAL WATER QUALITY REPORT

Reporting Period January 1, 2015 to December 31, 2015

Thank you for taking time to review the 2015 Annapolis Water Quality Report. This report will in form you about the quality of the water the city delivers to you each day.

In 2015, the drinking water produced by the City of Annapolis and provided to our water customers met all health and safety regulations. You'll note, among the important information in this report, that approximately 600 water samples were collected within the City's water system, with approximately 3,000 analyses performed for 110 various parameters. There were no water quality violations. This is something we are very proud of, and you should find the information very encouraging.

The city of Annapolis water treatment plant produces and delivers more than 1.5 billion gallons of water each year to residents and businesses. The Annapolis Department of Public Works is proud to serve the citizens of Annapolis, providing the best possible service.

I'm sure you will find the Water Quality Report useful, with interesting information that you may not have known about the city's water services, along with an update on the construction of the new water treatment plant and tips on how to be water-wise.

If you have any questions after reading the report, please call the Water Plant Superintendent or Assistant Superintendent at 410-224-2140.

Sincerely,

Michael Pantelides

Mayor Michael Pantelides

This report is intended to inform you about the quality of water and service we deliver to you everyday. As regulations and standards change and new challenges face the drinking water industry, we will continue to adopt new and better methods to deliver the best quality drinking water to our customers in the most cost effective manner.

Customer Service

Billing Questions (including high water bills)
410-263-7953

Emergency Hotline after hours and weekends
410-224-2140

Department of Public Works (8:00 am to 4:30 pm)
410-263-7949

Website

Visit our website at www.annapolis.gov for additional information. A PDF version of this report can be downloaded from our website.

Additional copies of this report may be obtained at the Department of Public Works Office, 145 Gorman Street, 2nd Floor.

En Espanol: Este informe contiene information muy importante. Traduscalo o hable con un amigo quien entienda bien.

WATER QUALITY DATA 2015

The table below shows those constituents which were present at levels above the minimum detection limit but below the maximum contaminant level (MCL).

Contaminants	Maximum Contaminant Level		Avg	Level Detected	Sample Date	Violation	Sources of Contamination
	MCL	MCLG					
Inorganic							
Flouride (ppm)	4	4	n/a	0.659	Feb 2014	No	Erosion of natural deposits; water additive which promotes strong teeth.
Barium (ppm)	2	2	n/a	0.0179	Feb 2014	No	Erosion of natural deposits; discharge of drilling wastes; discharge from metal refineries.
Lead (ppb)	AL=15	0	n/a	ND	Aug 2014	No	Corrosion of household plumbing systems
Copper (ppm)	AL=1.3	1.3	n/a	0.009	Aug 2014	No	Corrosion of household plumbing systems
Radioactive							
Strontium (ppb)	unregulated		43	41 ~ 45	Apr 2014	No	Erosion of natural deposits.
Metals							
Sodium (ppm)	n/a	n/a	n/a	3.03	Feb 2014	No	Naturally present in the environment.
Disinfectant and Disinfection By-Products							
Chlorine	MRDL=4	MRDLG=4		1.1	n/a	No	Water additive used to control microbes.
Total Trihalomethanes (ppb) STAGE 2	80	n/a	7	0 – 10.4	Quarterly 2015	No	By-product of chlorinated organic matter.
Total Haloacetic Acids (ppb) STAGE 2	60	n/a	1	0 - 1.43	Quarterly 2015	No	By-product of chlorinated organic matter.
Chlorate (ppb)	unregulated		177	167 ~ 186	Apr 2014	No	By-product of chlorinated organic matter.
Microbiological							
Total Coliform (Presence or absence)	5% positive	0	2.1%	2.1%	June - September 2015	No	Naturally present in the environment.

Maximum Contaminant Level (MCL): Highest level of contaminant allowed in drinking water. MCLs are set as close to MCLGs as possible.

Maximum Contaminant Level Goal (MCLG): Level of contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

Maximum residual disinfectant level goal or MRDLG: 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.

Maximum residual disinfectant level or MRDL: 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.

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

ppm: Parts per million (equivalent to milligrams per liter).

ppb: Parts per billion (equivalent to micrograms per liter).

pCi/L: Picocuries per liter.

ND: Non-detectable.

Information from EPA

As water travels over the land or underground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pick up substances and contaminants such as microbes, inorganic and organic chemicals, and radioactive substances. All drinking water, including bottled water, may reasonably be expected to contain at least very small amounts of some of these substances. It is important to remember that the presence of these substances does not necessary pose a health risk. More information about contaminants and their potential health effects can be obtained via the Environmental Protection Agency's (EPA) Safe Drinking Water Hotline at 1-800-426-4791 or website at http://www.epa.gov/ogwdw/hotline.

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, and wildlife.
- Inorganic contaminants, such as salts and metals, which can be naturally occurring or 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 byproducts of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.
- Radioactive contaminants, which can be naturally-occurring be the result of oil and gas production and mining activities.

We are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether your drinking water meets health standards. It is noted that during the January through March 2015 monitoring period, the quarterly Stage 2 Disinfection By-Product reporting was submitted outside the required timeframe.

In 2014, the City was required by the Environmental Protection Agency to test for 21 additional unregulated contaminants. Two of the substances were detected, and are listed in the Water Quality Table. These substances (strontium and chlorate) are tested to determine whether there is a need for further testing or regulation.

In 2003, the City and Anne Arundel County completed a study of the outcrop areas of the aquifers used in raw water sources at our Treatment Plant. The study concluded that there are no immediate threats to the raw water quality and little chance of any change to this condition in the future.

Help Protect Your Local Water System

Water Security is a shared responsibility involving water suppliers, wastewater utilities, government, law enforcement, and **citizens**. Citizens, businesses, and neighborhood watch groups are asked to report suspicious activity to the City.

Suspicious Activity could be:

- Someone opening or connecting to a fire hydrant.
- Someone climbing or cutting a utility fence.
- Unidentified truck or car parked or loitering near pumping stations, fire hydrants, elevated water tanks, or facilities for no apparent reason.
- Someone on top of water tanks.
- Suspicious opening or tampering with manhole covers.
- Strangers hanging around locks or gates at treatment plants or towers.

Local drinking water and wastewater systems may be targets for terrorists or other would-be criminals wishing to disrupt and cause harm to your community water supplies or wastewater facilities. Water utilities are often located in isolated areas and cover large areas that are difficult to secure and patrol.

DO NOT confront strangers. Instead, report suspicious activity. During normal business hours, call Public Works at 410-263-7949 or, after hours/weekends, call 410-224-2140.

What information to provide when reporting to the City:

- Take a picture.
- Write-down tag numbers and type of vehicle.
- A description of individuals.
- The date and time of activity.

Watch Your Water Use

Saving water also saves energy, which in turn reduces greenhouse gas emissions. It takes a lot of energy to treat the water to make it safe to drink and then to deliver it to your house. It takes even more energy to turn it into hot water. Did you know that letting your faucet run warm water for five minutes uses about as much energy as leaving a 60–watt light bulb on for 14 hours?

- **Be water–wise.** Turn the water off while brushing your teeth, and try taking shorter showers.
- **Fix that faucet.** A faucet that leaks at a rate of one drip per second can waste more than 3,000 gallons of water in a year.
- **Look for leaks.** If your toilet has a leak, you could be wasting 200 gallons of water a day. Try putting a drop of food coloring in the toilet tank. If the color shows up in the bowl without flushing, you have a leak!
- **Keep it cool.** Wash only full loads of laundry, and use cold water instead of hot. About 90 percent of the energy used for washing clothes is for heating the water.
- **Go low–flow.** Install water–efficient appliances and plumbing fixtures.
- **Watering the Lawn.** The typical single family suburban household uses at least 30 percent of their water for irrigation. Watering too much is just as harmful to your lawn and the environment as not watering.

Source: US EPA

New Water Treatment Plant — Under Construction

In 2014, the City began construction of the new water treatment plant. Phase I, which was completed in the Fall of 2014, included the demolition of the old open clear well, installation of a shoring system, and temporary relocation of electrical lines.

Phase II is underway with new treatment processes that are expected to be on line by the end of 2016.

Phase II includes the construction of four buildings; two process, one chemical storage, and one administration/shop/lab and over 1 mile of new distribution and process pipeline. For the first time, the Water Treatment Plant will be fully automated with the potential to be operated in an unmanned mode for periods of time.

City of Annapolis

Water Plant History

1863 - State House caught fire. Maryland Lawmakers were concerned about having an adequate supply of water to fight the fire.

1865 - Maryland General Assembly chartered the Annapolis Water Company. Maryland lawmakers ordered the creation of a company for the purpose of providing "pure, healthful water for all purposes."

1866 - Waterworks began operation. It was designed by nationally recognized civil engineer William Rich Hutton, who was born in Washington DC.

1912 - Annapolis' water plant was one of the first to add a filtration system. Maryland State Board of Health reported that Annapolis water was far superior to that of Maryland's largest City.

1929 - The filtration building was built. This building is the main portion of our water treatment system still used today.

Prior to 1931 - Water was piped from the reservoir to man-made settling basins, then distributed from the pump house.

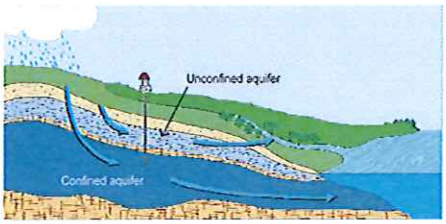
1993 - Annapolis drilled its first drinking water well and began mixing that with water from the reservoir.

1985 -During water distribution repair, City personnel discovered some wooden water pipes that were used to carry water to City residents. We estimate that these pipes pre-date the civil war.

The new Plant is setting a City standard for low impact environmental design. The Plant will be certified as a LEED Silver facility and will also be the first municipal facility certified through the ENVISION program in the State of Maryland.

Architectural rendering of new plant

Where does Annapolis' water come from?



The City of Annapolis' water supply originates from eight wells. These wells range from 250 to 1000 feet deep. The wells are drilled into three aquifers: Magothy, Upper Patapsco, and Lower Patapsco. The three aquifers are similar in water characteristics, and the water from each is treated in the same manner.

The City of Annapolis water treatment plant produces and delivers over 1.5 billion gallons of water each year to residents and businesses.

Lead and Copper Rule

With the recent water situation in Flint, Michigan, there is significant concern about the presence of lead in drinking water. Lead released into the environment makes its way into the air, soils, and water. Lead can remain in the environment indefinitely. Children and pregnant women are particularly susceptible to the health effects of lead poisoning. Lead can occur in tap water, and when detected, it usually comes from older home plumbing or lead service pipes. Generally, high levels of lead in drinking water are caused by two factors, both of which must be present. The first is the presence of lead pipes as mentioned above. Unlike Flint, lead service pipes are rare in Annapolis. The second factor is the corrosivity of the drinking water. When the City of Flint changed their drinking water source, they did not adequately adjust their water treatment to ensure that the water wasn't corrosive. Corrosive water encourages the dissolving of lead in the pipes, leading to high concentrations of lead in the water. The City's water treatment plant has a proactive corrosion control program to minimize lead leaching from plumbing materials. Every three years, the City of Annapolis takes water samples from 30 representative homes in the City. The sampling and testing is done in accordance with the requirements of EPA's Lead and Copper Rule. The test results are used to determine if the corrosion control program is working. The test results have consistently shown that the corrosion control program keeps lead levels to a minimum. **For 2014, our most recent Lead and Copper Rule sampling and testing, lead was not detected in any of the samples.** Monthly sampling and testing is also performed in the distribution system to determine if adjustments are required at the water treatment plant to prevent the water from being corrosive.

The City of Annapolis is responsible for providing high quality drinking water, but cannot control the variety of materials used in residential plumbing systems. It is the homeowner's responsibility to maintain, repair and replace the water service lines from the water meter to the home. Homeowners can minimize lead exposure when water has been sitting for several hours in the home's pipes by flushing the system. Residents can flush the system by letting water run for at least 30 seconds before using water for drinking or cooking.

Anyone concerned about lead exposure in drinking water, may wish to have the system tested. Information on lead in drinking water, testing methods, and steps to minimize exposure is available from the EPA Safe Drinking Water Hotline at 1-800-426-4791 or at http://www.epa.gov/safewater/lead.

Vulnerable Populations

Some people are more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as people 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 from infections. These individuals should seek advice about drinking water from their health providers. EPA and the Center for Disease Control guidelines on appropriate means to lessen the risk of infection by cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (1-800-426-4791).

Cryptosporidium is a microscopic organism that is common in surface water. The organism comes from animal wastes in the watershed and is removed by a well-maintained water treatment process.

City of Annapolis' Water Treatment Process

Wells

Water is pumped from three underground aquifers.

Aeration

Once pumped out of the ground, water is passed through large aerators to add oxygen and remove dissolved gases.

Chemical Addition

Chlorine, lime, and alum are added to adjust the pH and disinfect the water.

Sedimentation Basins

Coagulation, flocculation, and sedimentation are processes that remove solid particles such as iron.

Filtration

Filtration removes remaining suspended matter by passing the water through filter media.

Fluoride Addition

Fluoride is added to the water to aid in the prevention of tooth decay.

Clearwell

Storage of finished water prior to entering the distribution system.

Distribution System

After undergoing the treatment process, finished water enters the distribution system. It is delivered to 11,700 homes and businesses throughout the City of Annapolis. The water distribution system is comprised of 138 miles of water mains. In addition to water mains, the distribution system consists of fire hydrants, valves, elevated storage tanks, and various other components that allow for the finished water to be delivered to the City's homes and businesses.

City of Annapolis

Michael John Pantelides | Mayor

Thomas C. Andrews | City Manager

City Council

Alderman Joe Budge	Ward One
Alderman Frederick M. Paone	Ward Two
Alderwoman Rhonda Pindell Charles	Ward Three
Alderwoman Shelia M. Finlayson	Ward Four
Alderman Jared Littmann	Ward Five
Alderman Kenneth A. Kirby	Ward Six
Alderman Ian Pfeiffer	Ward Seven
Alderman Ross H. Arnett, III	Ward Eight

Department of Public Works

David Jarrell, P.E. | Director

James FitzGerald | Superintendent
Annapolis Water Treatment Plant

Citizens are welcome to attend City Council meetings for an opportunity to comment on legislation that may affect the quality of the drinking water. Meetings are held twice a month at 7:00 pm. Please refer to the schedule of meetings on the City Website at www.annapolis.gov. For a quick link, www.ci.annapolis.md.us/Government/Council/Docs/MeetingDates2014.pdf

Did you know?

- The United States uses nearly 80% of its water for irrigation and thermoelectric power.
- Of all the water on earth, humans can use only about 0.3% of this water. The usable water is found in groundwater aquifers, rivers, and freshwater lakes.
- 780 million people worldwide lack access to an improved water source.
- The driest half of the planet houses 85% of the population.
- 90% of the world's supply of fresh water is located in Antarctica.

City of Annapolis
Department of Public Works
145 Gorman Street, 2nd Floor
Annapolis, Maryland 21401

PRSRT STD
U.S. POSTAGE
PAID
PERMIT #273
ANNAPOLIS, MD