

ANNUAL WATER QUALITY REPORT

REPORTING YEAR 2018



Presented By
**Anne Arundel County,
Department of Public Works**

County Executive Message

I am pleased to present the 2018 Anne Arundel County Drinking Water Quality Report and announce that the more than 12 billion gallons of drinking water produced, treated, and delivered each year to our residential and commercial customers is clean and reliable. Please review this report and the important information regarding the thousands of water quality tests administered by the Department of Public Works (DPW) Bureau of Utility Operations in the 2018 calendar year.

I encourage everyone in our county to learn more about the quality of your drinking water and DPW's work to manage and maintain our public water infrastructure each day. These efforts protect this valuable resource and our public safety and enable us to continue our long-standing record of safe and clean drinking water that exceeds all federal standards.



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. We are 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 at www.epa.gov/safewater/lead.

We remain vigilant in delivering the best-quality drinking water

Count on Us

Delivering high-quality drinking water to our customers involves far more than just pushing water through pipes. Water treatment is a complex, time-consuming process. Because tap water is highly regulated by state and federal laws, water treatment plant and system operators must be licensed and are required to commit to long-term, on-the-job training before becoming fully qualified. Our licensed water professionals have a basic understanding of a wide range of subjects, including mathematics, biology, chemistry, and physics. Some of the tasks they complete on a regular basis include:

- Operating and maintaining equipment to purify and clarify water;
- Monitoring and inspecting machinery, meters, gauges, and operating conditions;
- Conducting tests and inspections on water and evaluating the results;
- Maintaining optimal water chemistry;
- Applying data to formulas that determine treatment requirements, flow levels, and concentration levels;
- Documenting and reporting test results and system operations to regulatory agencies; and
- Serving our community through customer support, education, and outreach.

So, the next time you turn on your faucet, think of the skilled professionals who stand behind each drop.

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>.



Where Does My Water Come From?

Anne Arundel County DPW customers enjoy an abundant water supply from four deep aquifers. Our 12 water treatment facilities draw water from the Patapsco, Patuxent, and Aquia Aquifers. Combined, our treatment facilities provide roughly 12 billion gallons of clean drinking water every year.

Water Treatment Process

Wells

Water is taken from underground wells (150 - 1,550 feet deep) in the Patapsco, Patuxent, and Aquia Aquifers.

Aeration

Once removed from the ground, water is then passed through large aerators to add oxygen and remove dissolved gases.

Chemical Addition

Chemicals such as chlorine and lime are added to adjust the pH and disinfect the water.

Coagulation, Flocculation, Sedimentation

These processes remove solid particles such as iron.

Filtration

Filtration further removes 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.

Distribution

After undergoing the treatment process, finished water enters the distribution system. It is then delivered to over 116,000 homes and businesses throughout Anne Arundel County. The water distribution system is comprised of a network of over 1,400 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 make it possible for the finished water to be delivered to the county's homes and businesses.



Source Water Assessment

A source water assessment is a process for evaluating the source of a public drinking water supply's vulnerability to contamination. Our system has a rating of low. The assessment does not address the treatment or distribution aspects of the water system, which are covered under separate provisions of the Safe Drinking Water Act. The Maryland Department of the Environment is the lead agency in developing these assessments, which have been completed for all county water systems.

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.

CONTACT DPW

Visit us online at www.DPWandYou.com.

24-Hour Emergency Hotline: (410) 222-8400

From South County: (410) 451-4118

Billing Office: (410) 222-1144

DPW Customer Relations: (410) 222-7582

DPW General Information: (410) 222-7500

2018 CCR <http://www.aacounty.org/departments/public-works/utilities/forms-and-publications/WaterQuality2018.pdf>

Test Results

Our water is monitored and analyzed for many different kinds of contaminants on a very strict sampling schedule to meet state and federal regulations. The water we deliver must meet specific health standards as defined by the Safe Drinking Water Act. In our data table, we only show those substances that were detected in our water. 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. On average, Anne Arundel County DPW performs over 40,000 drinking water analyses based on federal- and state-mandated guidelines.

The state recommends monitoring 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.

We participated in the fourth 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 U.S. EPA with data on the occurrence of contaminants suspected to be in drinking water, in order to determine if the U.S. EPA needs to introduce new regulatory standards to improve drinking water quality.

REGULATED SUBSTANCES													
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	Glen Burnie Zone		Pasadena Zone		Broadneck Zone		Crofton / Odenton Zone		VIOLATION	TYPICAL SOURCE
				HIGHEST LEVEL	RANGE LOW-HIGH	HIGHEST LEVEL	RANGE LOW-HIGH	HIGHEST LEVEL	RANGE LOW-HIGH	HIGHEST LEVEL	RANGE LOW-HIGH		
Alpha Emitters (pCi/L)	2018	15	0	5.3	ND–5.3	13.7	8.0–13.7	1.8	1.8–1.8	1.1	1.1–1.1	No	Erosion of natural deposits
Antimony (ppb)	2017	6	6	NA	NA	NA	NA	NA	NA	NA	NA	No	Discharge from petroleum refineries; Fire retardants; Ceramics; Electronics; Solder
Arsenic (ppb)	2017	10	0	NA	NA	NA	NA	NA	NA	NA	NA	No	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes
Barium (ppm)	2018	2	2	0.017	0.01–0.017	0.03	0.03–0.03	0.07	0.01–0.07	0.02	0.02–0.02	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Cadmium (ppb)	2018	5	5	3	3–3	0.3	0.3–0.3	NA	NA	NA	NA	No	Corrosion of galvanized pipes; Erosion of natural deposits; Discharge from metal refineries; Runoff from waste batteries and paints
Combined Radium (pCi/L)	2018	5	0	3.4	ND–3.4	8.6	6.4–8.6	1.8	1.8–1.8	NA	NA	No	Erosion of natural deposits
Ethylbenzene (ppb)	2018	700	700	NA	NA	NA	NA	NA	NA	NA	NA	No	Discharge from petroleum refineries
Fluoride (ppm)	2018	4	4	1.6	ND–1.6	1.2	ND–1.2	1.0	ND–1.0	1.0	ND–1.0	No	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories
Haloacetic Acids [HAA] (ppb)	2018	60	NA	1.8	ND–4.8	5.5	ND–8.0	ND	NA	1.3	ND–1.0	No	By-product of drinking water disinfection
Nitrate (ppm)	2018	10	10	1	0.6–1	3.4	3.4–3.4	ND	NA	ND	NA	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Total Coliform Bacteria (% positive samples)	2018	<5%	0%	NA	NA	NA	NA	NA	NA	NA	NA	No	Naturally present in the environment
TTHMs [Total Trihalomethanes] (ppb)	2018	80	NA	19.0	ND–5.0	21.6	ND–48.3	ND	NA	5.7	ND–6.8	No	By-product of drinking water disinfection
Tetrachloroethylene (ppb)	2014	5	0	NA	NA	2	2–2	NA	NA	NA	NA	No	Discharge from factories and dry cleaners

REGULATED SUBSTANCES													
				Broad Creek Zone		Gibson Island Zone		Herald Harbor Zone		Rose Haven Zone			
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	HIGHEST LEVEL	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE						
Alpha Emitters (pCi/L)	2018	15	0	NA	NA	NA	NA	NA	NA	NA	NA	No	Erosion of natural deposits
Antimony (ppb)	2017	6	6	NA	NA	1	1–1	NA	NA	NA	NA	No	Discharge from petroleum refineries; Fire retardants; Ceramics; Electronics; Solder
Arsenic (ppb)	2017	10	0	NA	NA	NA	NA	NA	NA	1.0	1.0–1.0	No	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes
Barium (ppm)	2018	2	2	0.01	0.01–0.01	0.01	0.01–0.01	NA	NA	0.07	0.07–0.07	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Cadmium (ppb)	2018	5	5	NA	NA	NA	NA	NA	NA	NA	NA	No	Corrosion of galvanized pipes; Erosion of natural deposits; Discharge from metal refineries; Runoff from waste batteries and paints
Combined Radium (pCi/L)	2018	5	0	NA	NA	0.8	0.8–0.8	NA	NA	NA	NA	No	Erosion of natural deposits
Ethylbenzene (ppb)	2018	700	700	NA	NA	NA	NA	NA	NA	0.9	0.5–0.9	No	Discharge from petroleum refineries
Fluoride (ppm)	2018	4	4	1.5	ND–1.5	1.10	ND–1.10	1.0	ND–1.0	0.9	ND–0.9	No	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories
Haloacetic Acids [HAA] (ppb)	2018	60	NA	4.0	ND–6.0	2.4	2.4–2.4	1.2	1.2–1.2	17.4	17.4–17.4	No	By-product of drinking water disinfection
Nitrate (ppm)	2018	10	10	ND	NA	ND	NA	ND	NA	ND	NA	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Total Coliform Bacteria (% positive samples)	2018	<5%	0%	NA	3.3%	NA	NA	NA	NA	NA	NA	No	Naturally present in the environment
TTHMs [Total Trihalomethanes] (ppb)	2018	80	NA	6.2	ND–4.9	6.8	6.8–6.8	5.3	5.3–5.3	35.6	35.6–35.6	No	By-product of drinking water disinfection
Tetrachloroethylene (ppb)	2014	5	0	NA	NA	NA	NA	NA	NA	NA	NA	No	Discharge from factories and dry cleaners
Tap water samples were collected for lead and copper analyses from sample sites throughout the community													
				Glen Burnie Zone		Pasadena Zone		Broadneck Zone		Crofton / Odenton Zone			
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AL	MCLG	HIGHEST LEVEL (90TH %ILE)	SITES ABOVE AL/ TOTAL SITES	HIGHEST LEVEL (90TH %ILE)	SITES ABOVE AL/ TOTAL SITES	HIGHEST LEVEL (90TH %ILE)	SITES ABOVE AL/ TOTAL SITES	HIGHEST LEVEL (90TH %ILE)	SITES ABOVE AL/ TOTAL SITES	VIOLATION	TYPICAL SOURCE
Copper (ppm)	2018	1.3	1.3	0.059	0/50	0.059	0/50	0.06	0/50	0.07	0/30	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead (ppb)	2018	15	0	ND	0/50	ND	0/50	ND	0/50	ND	0/30	No	Lead service lines, corrosion of household plumbing systems, including fittings and fixtures; Erosion of natural deposits
Tap water samples were collected for lead and copper analyses from sample sites throughout the community													
				Broad Creek Zone		Gibson Island Zone		Herald Harbor Zone		Rose Haven Zone			
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AL	MCLG	HIGHEST LEVEL (90TH %ILE)	SITES ABOVE AL/ TOTAL SITES	HIGHEST LEVEL (90TH %ILE)	SITES ABOVE AL/ TOTAL SITES	HIGHEST LEVEL (90TH %ILE)	SITES ABOVE AL/ TOTAL SITES	HIGHEST LEVEL (90TH %ILE)	SITES ABOVE AL/ TOTAL SITES	VIOLATION	TYPICAL SOURCE
Copper (ppm)	2018	1.3	1.3	0.06	0/30	ND	0/15	NA	NA	0.3	0/10	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead (ppb)	2018	15	0	1.6	0/30	NA	NA	NA	NA	NA	NA	No	Lead service lines, corrosion of household plumbing systems, including fittings and fixtures; Erosion of natural deposits

UNREGULATED SUBSTANCES

		Glen Burnie Zone		Pasadena Zone		Broadneck Zone		Crofton / Odenton Zone		
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	HIGHEST LEVEL	RANGE LOW-HIGH	HIGHEST LEVEL	RANGE LOW-HIGH	HIGHEST LEVEL	RANGE LOW-HIGH	HIGHEST LEVEL	RANGE LOW-HIGH	TYPICAL SOURCE
Chloromethane (ppb)	2015	NA	NA	2.2	2.2–2.2	NA	NA	NA	NA	Occurs naturally in the environment; Petroleum; Refrigerants
Nickel (ppb)	2018	17	7–17	22	22–22	NA	NA	0.01	0.01–0.01	Occurs naturally in the environment
Sodium (ppm)	2018	3.6	2.6–3.6	6.2	6.2–6.2	10	2.4–10	9.4	0.4–9.4	NA

UNREGULATED SUBSTANCES

		Broad Creek Zone		Gibson Island Zone		Herald Harbor Zone		Rose Haven Zone		
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	HIGHEST LEVEL	RANGE LOW-HIGH	HIGHEST LEVEL	RANGE LOW-HIGH	HIGHEST LEVEL	RANGE LOW-HIGH	HIGHEST LEVEL	RANGE LOW-HIGH	TYPICAL SOURCE
Chloromethane (ppb)	2015	NA	NA	NA	NA	NA	NA	NA	NA	Occurs naturally in the environment; Petroleum; Refrigerants
Nickel (ppb)	2018	NA	NA	NA	NA	NA	NA	NA	NA	Occurs naturally in the environment
Sodium (ppm)	2018	5.5	4.5–5.5	3.5	3.5–3.5	2.6	2.6–2.6	8.2	8.2–8.2	NA

OTHER SUBSTANCES

		Pasadena Zone		Crofton / Odenton Zone		Rose Haven Zone		
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	HIGHEST LEVEL	RANGE LOW-HIGH	HIGHEST LEVEL	RANGE LOW-HIGH	HIGHEST LEVEL	RANGE LOW-HIGH	TYPICAL SOURCE
Bromochloroacetic Acid (ppb)	2018	NA	NA	0.58	ND–0.58	NA	NA	By-product of drinking water disinfection
Chromium [Total] (ppb)	2016	NA	NA	NA	NA	2.0	2.0–2.0	Paint; Welding
Manganese (ppb)	2018	NA	NA	7.45	1.43–7.45	NA	NA	Erosion of natural deposits
Methyl-tert-butyl-ether (ppb)	2014	0.6	0.6–0.6	NA	NA	NA	NA	Octane enhancer of fuel products
m,p-Xylene (ppb)	2018	NA	NA	NA	NA	2.25	1.50–2.25	Plastic manufacturing
o-Xylene (ppb)	2017	NA	NA	NA	NA	1.47	0.81–1.47	Plastic manufacturing

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 which, if exceeded, triggers treatment or other requirements which a water system must follow.

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

ND (Not detected): Indicates that the substance was not found by laboratory analysis.

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).