



Naval Support Activity Annapolis Annapolis, Maryland 2016 WATER QUALITY REPORT



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PROVIDING HIGH QUALITY WATER TO OUR CUSTOMERS

Naval Support Activity Annapolis (NSAA) is committed to providing you high quality drinking water that is safe and reliable. We are pleased to provide you with the 2016 Annual Water Quality Report with detailed information about the source and quality of your drinking water. We have prepared this report using the data from water quality testing conducted January through December 2016, unless otherwise noted. You'll find that we supply water that surpasses or meets all federal and state water quality regulations.

Where does your water come from? The NSAA Water Treatment Plant obtains untreated (i.e. raw) water from three groundwater wells owned and maintained by NSAA. These wells withdraw groundwater from the Patapsco Aquifer, approximately 600 to 700 feet below the ground surface. The Maryland Department of the Environment (MDE) completed an assessment of our source water in June 2004. This assessment determined that potential sources of contamination include leaking underground storage tanks, landfills, permitted discharges, large-scale feeding operations and former disposal sites. These sites are generally associated with commercial/industrial facilities that use chemical substances that may, if inappropriately handled, contaminate ground water via a discrete location point. Non-point sources of contamination are associated with certain land use practices that may lead to ground water contamination over a greater area. Since all potential sources of contamination are identified at the land surface, they have the potential to impact only the shallow water table aquifer. As long as there is no potential for direct injection into deeper confined aquifers, the water supply should be well protected from ground water contamination. The complete assessment is included in MDE's Source Water Assessment for community water systems using confined aquifers and is available on MDE's website:

http://mde.maryland.gov/programs/water/water_supply/Source_Water_Assessment_Program/Documents/www.mde.state.md.us/assets/document/watersupply/SWAPS/Anne%20Arundel/For%20Community%20Water%20Systems%20Using%20Confined%20AquifersFINAL.pdf

How is your water treated? Groundwater is withdrawn from the aquifer via three wells to aerators on top of the water treatment plant building. The water trickles through a number of metal trays, which allows the water to be infused with oxygen and release any gasses present in the raw water. This causes dissolved metals such as iron and manganese to be oxidized, easing their removal. Removing these metals is important to minimize red and black stains at your tap and in your laundry. Water moves from the tray aerators into the water treatment plant where four different chemicals (flocculant, lime, fluoride and chlorine) are added. The flocculant helps to make suspended particles in the water stick together and settle out. Lime is added to increase the pH of the water, increasing the effectiveness of the flocculant. Chlorine helps to oxidize the remaining dissolved metals and fluoride is added to prevent tooth decay. The water then flows to the clarifier tanks, where larger sticky particles ("flocs") form and settle in a process called flocculation. The water that passes through is then piped to the filtration tanks located inside the water treatment plant. The clarified water is filtered via seven (7) continuous backwashing, up-flow, deep bed, mono-media sand filters. Chlorine is added once again as a disinfectant to ensure there are no remaining microbial contaminants, completing the treatment process. The treated (finished) drinking water is then moved into two large (1 million gallons each) above ground storage tanks. A combination of high-rate pumps and the elevated 750,000-gallon water tower provides the pressure necessary to move this treated drinking water throughout the NSAA distribution system and, ultimately, to your faucets, drinking water fountains, pools and other places where potable water is required.

Definitions

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

Coliform - A group of bacteria commonly found in the environment. They are an indicator of potential contamination of water. Adequate and appropriate disinfection effectively destroys bacteria.

Disinfection - A process that effectively destroys coliform bacteria.

Contaminant - Any naturally-occurring or man-made physical, chemical, biological, or radiological substance in water, which at a high enough level may have an adverse effect on public health, and which is known or anticipated to occur in public water systems.

Maximum Contaminant Level (MCL) - 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.

Maximum Contaminant Level Goal (MCLG) - The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs are non-enforceable public health goals and allow for a margin of safety.

mg/l - milligram per liter. A milligram per liter is roughly equivalent to a part per million (ppm).

Maximum Residual Disinfectant Level (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.

Maximum Residual Disinfectant Level Goal (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.

Nitrates - A dissolved form of nitrogen found in fertilizers and sewage by-products, which may leach into groundwater and other water sources. Nitrates may also occur naturally in some waters.

Picocuries per liter - A measurement of radiation released by a set amount of a certain compound.

pH - A measure of the acidity or alkalinity of water.

ppb - part per billion. Measurement of the amount of contaminant per unit of water. A part per billion is like one dollar in \$1,000,000,000.

ppm - part per million. Measurement of the amount of contaminant per unit of water. A part per million is like one dollar in \$1,000,000.

Understanding Your Drinking Water

Your tap water is of high quality and meets all MDE, federal Environmental Protection Agency (EPA) and Navy standards for drinking water. The NSAA Water Treatment Plant is regulated by the federal Safe Drinking Water Act (SDWA) to ensure that public health and safety is protected.

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 and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity. Your drinking water is obtained through three wells.

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 storm water 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 storm water 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 storm water runoff and septic systems.
- Radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities.

NSAA routinely monitors your drinking water for potential contaminants. The sampling schedule for each contaminant varies by parameter, ranging from twice monthly to once every several years. The MDE allows us to monitor for some contaminants less than once per year because the concentrations of these contaminants in deep groundwater do not change frequently. Some of our data, though representative, are more than one year old.

The tables on page 3 list **only** those contaminants that were present in your drinking water at levels detectable by laboratory equipment. Nitrates and coliform bacteria were not detected in our monitoring so they are not included in the tables. The tables contain the name of each contaminant, the likely sources of such contamination, the amount detected, the highest level allowed by regulation (MCL), the ideal goals for public health (MCLG) and whether or not the detected amount meets EPA standards. The MCLs listed in the tables are set by the EPA. These levels are based on the assumption that the average person drinks 2 liters of water each day over a 70-year life span. The MCLs are typically set at a level that will cause no harm or a one-in-ten thousand to one-in-a-million chance increase over the average risk of having the associated health effect as a result of exposure to a particular contaminant.

2016 Monitoring Data for NSAA Distribution System

The Table below shows those contaminants which were present at levels above the minimum detection limit but below the Maximum Contaminant Level (MCL) or Maximum Residual Disinfectant Levels (MRDL):

Contaminant	Maximum Contaminant Level		Highest Level Detected	Range of Detection	Sample Date	Violation Yes/No	Sources of Contamination
	MCL	MCLG					
Fluoride (ppm)	4	4	1.1	0.1-1.1	Daily	No	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
Contaminant	Maximum Contaminant Level		90 th Percentile Value	Range of Detection	Sample Date	Violation Yes/No	Sources of Contamination
	MCL	MCLG					
Copper (ppm)	AL ^a =1.3	1.3	<0.05 ^b	0.06-0.06	09/18/2016 thru 09/21/2016	No	Erosion of natural deposits; corrosion of household plumbing systems
Lead (ppb)	AL ^a =15	0	2.9 ^b	1.1-6.9	09/18/2016 thru 09/21/2016	No	Corrosion of household plumbing systems
Contaminant	Maximum Contaminant Level		Highest Level Detected	Range of Detection	Sample Date	Violation Yes/No	Sources of Contamination
	MCL	MCLG					
Total Trihalomethanes (ppb)	80	N/A ^c	7.8	1.1-7.8	09/01/2016	No	By-product of chlorinated organic matter
Total Haloacetic Acids (ppb)	60	N/A ^d	2.64	1.02-2.64	09/01/2016	No	By-product of chlorinated organic matter
Contaminant	Maximum Residual Disinfectant Level		Highest Running Annual Average	Range of Detection	Sample Date	Violation Yes/No	Sources of Contamination
	MRDL	MRDLG					
Chlorine (ppm)	4	4	0.86 ^e	0.0-1.46	Twice per month	No	Water additive used to control microbes

NSAA was selected for Assessment Monitoring for List 1 contaminants under the EPA Unregulated Contaminant Monitoring Rule (UCMR3) program. Unregulated contaminants are those for which the EPA has not yet established drinking water standards. Monitoring assists the EPA in determining the occurrence of these compounds and whether or not regulation is warranted. The table below lists those contaminants which were present at levels above the Minimum Reporting Limit (MRL):

Contaminant	Average Level Detected	Range of Detection	Sample Date	Sources of Contamination
Strontium ^f (ppb)	51	50-52	11/16/2015	Erosion of natural deposits; land deposition of air contamination from milling and processing strontium, coal burning and phosphate fertilizers.
Chromium-6 ^f (ppb)	0.16	0.16-0.16	11/16/2015	Erosion of natural deposits; industrial waste

Notes: N/A - Not Applicable

^aAction Level for > 10% of sample/sites

^bCompliance with the MCL for Copper and Lead is based on the 90th percentile value of all analysis results.

^cAlthough there is no collective MCLG for this contaminant group, there are individual MCLGs for some of the individual contaminants: Trihalomethanes: bromodichloromethane (zero); bromoform (zero); dibromochloromethane (0.06 mg/L); chloroform (0.07 mg/L).

^dAlthough there is no collective MCLG for this contaminant group, there are individual MCLGs for some of the individual contaminants: Haloacetic acids: dichloroacetic acid (zero); trichloroacetic acid (0.02 mg/L); monochloroacetic acid (0.07 mg/L). Bromoacetic acid and dibromoacetic acid are regulated with this group but have no MCLGs.

^eCompliance with the MRDL for Chlorine is based on the highest Running Annual Average for the four quarters of the calendar year.

^fTesting for some parameters is not required on an annual basis. Results reflect the most recent testing in accordance with regulatory requirements.

Drinking Water and Your Health

Inadequately treated water may contain disease-causing organisms. Our water system tested 10 total samples per month (five locations) for microbial contaminants, in accordance with the Revised Total Coliform Rule. These microbial contaminants can cause symptoms such as nausea, cramps, diarrhea and associated headaches. They include bacteria, viruses and parasites. If these contaminants are detected, there also may be a potential for the presence of other, more harmful, organisms. **No coliform presence was detected in any of the 120 samples collected in 2016.**

The water treatment operators maintain a rigorous sampling schedule (some parameters are monitored several times per shift) to ensure proper plant operation. These include the continuous monitoring of pH, iron, hardness, residual chlorine and flow so that the proper amount of treatment additives (fluoride, chlorine, lime, and flocculants) can be used to generate high quality potable water.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised 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 can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/Centers for Disease Control and Prevention (CDC) 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)**.

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. NSAA is responsible for providing high quality drinking water but cannot control the variety of materials used in plumbing components. When 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 drinking or cooking. If you are concerned about lead in your drinking 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 EPA Safe Drinking Water Hotline or at <http://www.epa.gov/safewater/lead>. NSAA sampled for lead in September 2016 and all samples collected were below the EPA action limit of 15 ppb.

In order to ensure that tap water is safe to drink, EPA promulgates regulations, which limit the amount of certain contaminants in water provided by public water systems. U.S. Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water that must provide the same protection for public health. Any bottled water that is labeled "Drinking Water" has to meet FDA's drinking water regulations. Drinking water, including bottled water, may be reasonably expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the **EPA's Safe Drinking Water Hotline (1-800-426-4791)**.

Current Issues Impacting Your Drinking Water

The following drinking water regulations were adopted in recent years by EPA: Arsenic Rule, Groundwater Rule (GWR), Lead and Copper Rule, Revised Total Coliform Rule and Microbials & Disinfection Byproduct (DBPR). For more information about these rules, you can go to <https://www.epa.gov/dwreginfo/drinking-water-regulatory-information>.

There are issues with the presence of radium in shallow groundwater wells in Anne Arundel County, north of Route 50. For those of you who live in northern Anne Arundel County, the MDE has an informative web site, which discusses this issue, http://www.mde.state.md.us/programs/Water/Water_Supply/Pages/programs/waterprograms/water_supply/radium.aspx.

For those of you who reside and/or work in the North Severn area, Anne Arundel County has been supplying your water since December 1999 (upon closure of the former David Taylor Research Center's water treatment plant). Anne Arundel County Department of Public Works web site contains their most recent Annual Water Quality Report, which covers the entire county's water service area, <http://www.aacounty.org/departments/public-works/utilities/forms-and-publications/water-quality-reports/>.

The naval academy community has an important participatory role in helping us provide you with safe and reliable drinking water. Please contact us if you have any questions or concerns about the quality of your water. A copy of this report can be found at the Naval Academy public website listed below.

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WEBSITES

EPA: www.epa.gov/safewater
MDE: www.mde.maryland.gov/
Anne Arundel County: <http://www.aacounty.org/>
NSAA/USNA: <http://www.usna.edu/PublicWorks/enviro.htm>
(public access)

