

2018
U. S. NAVY WATER SYSTEM
WATER QUALITY REPORT



NAVAL FACILITIES ENGINEERING
COMMAND MARIANAS
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Naval Facilities Engineering Command Marianas operates the U.S. Navy Water System with support

The U.S. Navy Water System

The *Secondary Drinking Water Standards (Aesthetic)* are non-enforceable guidelines for limiting the contaminants in drinking water that affect its aesthetic quality (such as taste, smell, appearance, staining properties, etc.). Our drinking water may at times contain various aesthetic parameters above the recommended acceptable levels. While these parameters directly affect the aesthetic quality of your drinking water, they do not pose a health hazard.

The *National Primary Drinking Water Regulations (NPDWR)* sets limits for contaminants in drinking water and standards for water treatment that primarily safeguard health. *All drinking water samples from the U.S. Navy Water System met all primary water Maximum Contaminant Levels (MCL) in 2018.*

In order to ensure that tap water is safe to drink, the EPA created regulations that limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration regulations establish limits for contaminants in bottled water that must provide the same protection for public health.

Drinking Water Regulations

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example people in apartments, nursing homes, schools or businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

This annual report contains information about the quality of the water supplied by the U.S. Navy Water System during the period of January 1 to December 31, 2018. Included as part of this report is the "2018 U.S. Navy Water Quality Data" table detailing the water quality of our system. This report will help you, our customer, understand the relationship between the contaminants found in drinking water, activities that may contaminate the water supply, and their associated health effects.

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DEPARTMENT OF THE NAVY
U.S. Naval Base Guam
Navy Housing Office
PSC 455, Box 50
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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 U.S. Navy Water System 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 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 <http://www.epa.gov/safewater/lead>.

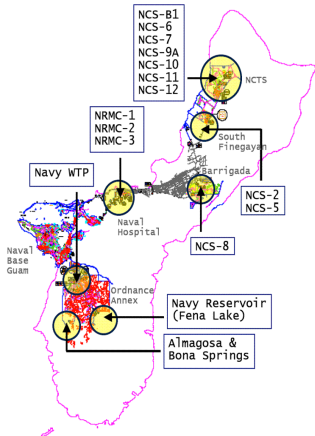
How Can You Obtain Additional Information?

Please contact Naval Hospital Preventative Medicine at (671) 344-9787 for health concerns related to this report. For information about the U.S. Navy Water System, please contact the Naval Facilities Engineering Command Marianas Utilities Department at (671) 333-1321. Additionally, Guam EPA Safe Drinking Water Program may be reached at (671) 300-4796.

How Can You Report a Water Quality Complaint?

Should you notice that your water is discolored, or if you have any concerns about your drinking water, you are encouraged to call our Service Support Center Trouble Desk at (671) 333-2011. Arrangements can be made to have your water sampled and analyzed to ensure that it is safe to drink.

U.S. Navy Water System



Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons such as cancer patients 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/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 at 1-800-426-4791.

Health Precautions

Monthly monitoring of our source water as required by the Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR) indicated the presence of *Cryptosporidium* in 1 out of 24 sampling events. Monitoring was initiated in October 2016 and was completed on September 2018. *Cryptosporidium* is a microbial pathogen found in surface water. Although filtration removes *Cryptosporidium*, the most commonly-used filtration system methods cannot guarantee 100% removal. Current test methods do not allow us to determine if the organisms are dead or if they are capable of causing disease. Symptoms of infection include nausea, diarrhea, and abdominal cramps. Most healthy individuals can overcome the disease within a few weeks. However, immunocompromised people, infants and small children, and the elderly are at greater risk of developing life-threatening illness and are encouraged to consult their doctor regarding appropriate precautions to avoid infection.

We are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not your drinking water meets health standards. The Navy Water System also completed all monitoring requirements for the fourth Unregulated Contaminants Monitoring Rule (UCMR4) which was conducted during the 2nd quarter of 2018 through the 1st quarter of 2019. Unregulated contaminants are those that do not have a drinking water standard set by U.S. EPA. The purpose of monitoring these contaminants is to help EPA decide whether the contaminants should have standards. If you are interested in examining the results, please contact DZSP21 Environmental Compliance at 339-8023 and Naval Base Guam, PWD Environmental Division at 339-4100.

Monitoring, Reporting and Violations

Drinking water, including bottled water, may reasonably be expected to contain 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 Environmental Protection Agency's (EPA) Safe Drinking Water Hotline at 1-800-426-4791.

- *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.
- *Radioactive contaminants*, which can be naturally occurring or be the result of oil and gas production and mining activities.
- *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.

Why are contaminants found in my water ?

The primary source of water for the U.S. Navy Water System is the Navy (Fena) Reservoir. It is supplied by Almagosa Springs and Bona Springs, and is processed at the Navy Water Treatment Plant prior to distribution to Naval Base Guam and surrounding areas. Groundwater wells at NCTS, Finegayan, Barrigada, and Naval Hospital further augment our water system supplying these areas and supplementing the surface water-fed areas.

provided by our Base Operations Support contractor DZSP21, LLC.

2018 U.S. Navy Water Quality Data

The table below presents the 2018 water quality monitoring results of each detected contaminant in comparison with the established drinking water standards. The table also summarizes the monitoring times, the range of detections, whether or not the drinking water standards were met, the major sources of the contaminant, and the locations detected. Monitoring for some contaminants may occur at interval greater than once per year. This is allowed because the concentrations of these contaminants do not change frequently. Some data, though representative, are more than a year old.

DEFINITIONS:

1. Action Level (AL) - The concentration which, when exceeded, triggers treatment or other requirements which a water system must follow.
2. Maximum Contaminant Level (MCL) - The highest level of a contaminant allowed in drinking water; MCLs are set as close to the MCLGs as feasible using the best available treatment technology.
3. 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 allow for a margin of safety.
4. Maximum Residual Disinfectant Level (MRDL) - The level of a disinfectant that may not be exceeded at the consumer's tap without an unacceptable possibility of adverse health effects.
5. Maximum Residual Disinfectant Level Goal (MRDLG) - The maximum level of a disinfectant added for water treatment at which no known or anticipated adverse health effect will occur; MRDLGs allow for a margin of safety.
6. Treatment Technique (TT) - A required process intended to reduce the level of a contaminant in drinking water.

ABBREVIATIONS:	ARA - annual running average	NTU - Nephelometric Turbidity Unit	n/a - not applicable
	ppb - parts per billion (or micrograms per liter)	IOC - Inorganic Compound	nd - not detected (above laboratory detection limit)
	ppm - parts per million (or milligrams per liter)	SOC - Synthetic Organic Compound	MRL-Minimum Reporting Level

I. PRIMARY STANDARDS, Mandatory, Health-Related Standards, established by GEPA/USEPA

CONTAMINANT (Units)	Sample Year	MCLG	MCL	Range Low High		Violation	Major Sources of Contaminant	Locations Detected
Synthetic Organic Compounds								
Picloram (ppb)	2018	500	500	0.32	0.49	No	Herbicide runoff	Well NCS-8 (Radio Barrigada)
Inorganic Compounds								
Arsenic (ppb)	2018	0	0.01	0.0016	0.002	No	Erosion of natural deposits; runoff from orchards; runoff from glass & electronics production waste	Wells NCS-B1, NCS-8, NRMC-2
Barium (ppm)	2018	2	2	nd	0.0024	No	Discharge from petroleum; erosion of natural deposits; discharge from mines	Well NRMC-2
Fluoride (ppm)	2018	4	4	nd	0.52	No	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories.	Fluoride is tested anually throughout the system for compliance with the SDWA; these results are stated here. The Navy WTP is tested for fluoride levels daily.
Nitrate (ppm)	2018	10	10	0.14	2.34	No	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits	Navy WTP, Wells NCS-B1, NCS-6, NCS-8, NCS-9A, NCS-10, NCS-11, NCS-12, NRMC-1, NRMC-2
Radionuclides								
Gross Alpha Activity (pCi/L)	2017	0	15	nd	6.4	No	Erosion of natural deposits.	Wells NCS-10, NRMC-2
Radium 226 (pCi/L)	2017	0 Note 1	5 Note 1	1.1	2.3	No	Erosion of natural deposits.	Wells NCS-B-1, NCS-6, NCS-9A, NCS-10, NCS-11, NCS-12
Disinfectant and Disinfection Byproduct (DBPs)								
HAA5 [Five Haloacetic Acids] (ppb)	2018	n/a Note 2	60	5.2	45.8	No	Byproduct of drinking water chlorination	Distribution system
TTHMs [Total Trihalomethanes] (ppb)	2018	n/a Note 2	80	31.4	55.9	No		
Chlorine (ppm)	2018	4 (MRDLG)	4 (MRDL)	nd	3.6	No	Water additive used to control microbes	Distribution system
Control of DBP Precursors [Total Organic Carbon, TOC]	2018	n/a	TT ≥ 1.0 Note 3	2.5	3.3	No	Naturally present in the environment	Navy WTP
Special Monitoring for Sodium								
Sodium (ppm)	2018	n/a	n/a	11.8	190	No	Salt water intrusion from aquifer/salt water interface; sodium hydroxide reaction for pH control in water treatment	Navy WTP, Wells NCS-B1, NCS-6, NCS-8, NCS-9A, NCS-10, NCS-11, NCS-12, NRMC-1, NRMC-2

CONTAMINANTS (Units)	Sample Year	AL	MCLG	Your Water	Number of Samples Exceeding AL	Violation	Major Source of Contamination	Location Detected
Lead and Copper								
Copper (ppm)	2018	1.3 Note 4	1.3	0.278	None	No	Corrosion of household plumbing system, erosion of natural deposits	Distribution system
Lead (ppb)	2018	15 Note 4	0	nd	None	No	Corrosion of household plumbing system, erosion of natural deposits	Distribution system

CONTAMINANT (Units)	Sample Date	MCLG	MCL	Highest Monthly Percentage Total Coliform Positive Samples	Violation	Major Sources of Contaminant	Locations Detected
Microbiological Contaminants							
Total Coliform [TC] (% positive per month)	2018	0	5%	2.2%	No	Naturally present in the environment	Distribution System
Fecal Coliform [FC] (or E.coli)	2018	0	0 Note 5	0	No	Human and animal fecal waste	

CONTAMINANT (Units)	Sample Date	MCLG	MCL	Your Water	Violation	Major Sources of Contaminant	Locations Detected
Turbidity as an Indicator of Filtration Performance							
Turbidity (NTU)	2018	n/a	TT ≤ 0.3 NTU for 95% of samples Note 6	100%	No	Soil runoff	Navy WTP
	8/25/18		TT = 1 NTU Note 7	0.236	No		

CONTAMINANTS (Units)	Sample Date	MCLG	MCL	Violation	Major Sources of Contaminant	Locations Detected
Acrylamide (ppm)	2018	0	TT≤ 0.05% dosed at 1 ppm	No Note 8	Added to water during treatment	Navy WTP

II. SUMMARY OF REQUIRED MONITORING AND REPORTING

CONTAMINANT (Units)	Sample Date	MCLG	MCL	Mean Cryptosporidium Concentration	Violation	Major Sources of Contaminant	Locations Detected
Cryptosporidium							
Cryptosporidium (oocysts/L)	2016 - 2018	0	TT = 99% removal	0.002	n/a Note 9	Human and animal fecal waste	Navy WTP (Combined Springs)

CONTAMINANT (Units)	Sample Date	Average	Range Low High	Violation	Major Source of Contaminants	Location Detected
Fourth Unregulated Contaminants Monitoring Rule (UCMR4)						
Total HAA5 (ppb)	6/4/2018 - 3/4/2019	21.5	17 29	n/a Note 10	By-product of drinking water disinfection	68 Madrid Circle Bayview Housing, 15 Jetty Cove Harbor View Housing, 24 Portola Avenue Ocean Ridge Housing, 8 Anae Lane Apra View Housing
Total HAA6Br (ppb)	6/4/2018 - 3/4/2019	11.8	10 14			
Total HAA9 (ppb)	6/4/2018 - 3/4/2019	32.2	29 40			
1-butanol (ppb)	6/4/2018 - 3/4/2019	0.70	nd 3.5		Paint solvent, chemical intermediate, food additive	Navy WTP

NOTES:

Note 1: The combined radium (total of radium-226 and radium-228,pCi/L) MCL and MCLG are 5 and 0 respectively.

Note 2: Although there is no collective MCLG for these contaminants, individual MCLGs for some of the contaminants do exist. **HAAs:** Monochloroacetic acid (70 ppb), Dichloroacetic acid (zero), and Trichloroacetic acid (20 ppb). Bromoacetic acid and Dibromoacetic acid do not have MCLGs. **THM:** Bromodichloromethane (zero), Bromoform (zero), Chloroform (70 ppb), Dibromochloromethane (60 ppb). Compliance with MCL is based on LRAA calculated quarterly (highest reported average).

Note 3: TOC results are calculated monthly, as the % removal ratio 12-month ARA. The value must be >1.0

Note 4: The AL is exceeded if the concentration of more than 10 percent of tap water sample collected (the "90th percentile" level) is greater than 1.3 ppm for copper and 15 ppb for lead.

Note 5: MCL = A routine TC positive sample followed by a TC negative repeat . (A routine TC positive sample followed by a TC positive repeat sample is a violation of the MCL).

Note 6: TT = At least 95% of monthly filtered water samples must be <0.3 NTU, measured every four hours.

Note 7: TT = No filtered water sample should exceed 1 NTU.

Note 8: The combination (or product) of dose and monomer level of acrylamide should never exceed 0.05% dosed at 1 ppm (or equivalent).

Note 9: A 24-month source water monitoring was conducted to calculate the average *Cryptosporidium* concentration and a redetermination of our system bin classification as required by LT2ESWTR. An initial round of monitoring was conducted from April 2008 to March 2010 which classified the Navy Water System under the Bin 1 classification. As required by the LT2ESWTR, a second round of a 24 month source water monitoring was performed on October 2016 and completed on September 2018. One (1) out of the twenty (24) sampling events indicated the presence of *Cryptosporidium*. Based on calculations, the Navy Water System was reclassified under Bin 1 classification with an average *Cryptosporidium* concentration of < 0.075 oocysts/L and no additional treatment required by U.S. and Guam Environmental Protection Agency.

Note 10: Unregulated contaminants are those that do not have drinking water standards established by U.S. EPA. This monitoring provides a basis to develop future regulatory decisions for contaminants in the public drinking water supply.

HAA5 includes: dibromoacetic acid, dichloroacetic acid, monobromoacetic acid, monochloroacetic acid, trichloroacetic acid

HAA6Br includes: bromochloroacetic acid, bromodichloroacetic acid, dibromoacetic acid, dibromochloroacetic acid, monobromoacetic acid, tribromoacetic acid

HAA9 includes: bromochloroacetic acid, bromodichloroacetic acid, chlorodibromoacetic acid, dibromoacetic acid, dichloroacetic acid, monobromoacetic acid, monochloroacetic acid, tribromoacetic acid, trichloroacetic acid