

2017 Drinking Water Quality Report for Nellis Air Force Base

This report, required by the Environmental Protection Agency (EPA), is distributed by Nellis AFB as our communication to you, the consumer. The drinking water on the installation has been tested and certified as “safe to drink”. The information in this report is a snapshot of calendar year 2017 drinking water quality at Nellis AFB. This effort is accomplished in accordance with the EPA’s Safe Drinking Water Act (SDWA) which was passed by Congress in 1974. The purpose of the SDWA is to protect public health by regulating the nation’s public drinking water supply. It was amended in 1996 requiring states to develop and implement source water assessment programs for existing and potential threats to the quality of public drinking water. This includes a summary of the assessment in the water system’s annual consumer confidence report (CCR). States are required to delineate the sources of public drinking water, identify potential contamination sources within the delineated area, assess the water system’s susceptibility to contamination and inform the public of the results.

Drinking Water Sources

Most of Nellis AFB’s drinking water comes from Lake Mead and is supplied by the Southern Nevada Water Authority (SNWA). The water in Lake Mead begins as snowmelt in the Rocky Mountains and arrives via the Colorado River. The Las Vegas Wash also carries storm water and treated wastewater into Lake Mead, which accounts for less than 2% of all the water in the lake. The Virgin River and Muddy River also combine to provide approximately 1.5% of the water in Lake Mead. Lastly, the water Nellis AFB receives from SNWA is supplemented by a small percentage of groundwater from wells on and near the installation. The source of this well water originates from the Las Vegas Valley Aquifer.

Monitoring and Analysis

Every month, technicians from SNWA collect and analyze water samples from the Nellis AFB drinking water system and water treatment facilities. The water is tested at a higher frequency and more extensively than the SDWA and the Nevada Administrative Code requires. The test results are shown in the table accompanying this report.

Additionally, Nellis AFB routinely monitors for disinfectant residual in the distribution system. This measurement tells us whether

the installation is effectively disinfecting the water supply. Disinfectant residual is the amount of chlorine present in the water distribution system pipes. If the amount of disinfectant is too low (inadequately treated), disease-causing organisms, including bacteria, viruses, and parasites have the potential of growing within the pipes. These organisms can cause symptoms such as nausea, cramps, diarrhea, and associated headaches. However, these symptoms are not caused solely by organisms in drinking water and can be attributed to other factors (environmental, food based illnesses or person to person interaction).

Why are there contaminants in my drinking water?

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate the water poses a health risk. In order to ensure tap water is safe to drink, the EPA prescribes regulations to limit the amount of certain contaminants in the water provided by public water systems.

Common sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. Potential sources of contamination for lakes and reservoirs include wildlife and industrial activities (urban chemicals such as fertilizers and pesticides). Additionally, landfills, domestic septic systems, and leaking underground storage tanks are all potential sources of contamination for groundwater aquifers. Furthermore, as water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals, in some cases naturally occurring radioactive material, and can pick up substances resulting from the presence of animals or human activity.

More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline at 1-800-426-4791 or by visiting water.epa.gov/drink/hotline/index.cfm.

Potentially present contaminants in untreated source water include:

- Microbial contaminants such as viruses and bacteria, which may come from sewage treatment plants, septic systems, and wildlife.
- Inorganic contaminants such as salts and metals, which can be naturally occurring or result from urban storm runoff and industrial or domestic wastewater discharges.
- Pesticides and herbicides which may come from a variety of sources such as agriculture, urban storm water runoff, and residential use.
- Organic chemical contaminants including synthetic or volatile organic chemicals, which are byproducts of industrial processes, as well as, common sources like: gas stations, urban storm water runoff, and septic systems.

- Radioactive contaminants, which can be naturally occurring or the result of industrial activities.

Other Health Information

The following substances are monitored by SNWA but are not regulated under the SDWA. The Bioenvironmental Engineering Flight (BEF) has included this information because consumers have a right to know about known contaminants potentially affecting the water.

Cryptosporidium

Cryptosporidium is a naturally occurring microscopic organism which is frequently found in surface water in the United States. If ingested, it can cause gastrointestinal distress and fever. Filtration, sedimentation, and disinfection using ultraviolet light and ozone are generally effective at removing Cryptosporidium. SNWA carefully monitors the water for the presence of this organism.

Perchlorate

Perchlorate is a man-made salt consisting of chloride and oxygen. In general, it has been detected at low levels in untreated and treated water. Scientists have traced the origin of the salt to shallow groundwater entering the Las Vegas Wash. Although there are no federal limits for perchlorate in drinking water, SNWA is closely monitoring the efforts by Nevada Division of Environmental Protection (NDEP) to intercept and remove perchlorates at the source.

Lead

While your water meets the EPA's standard for Lead, *if present at elevated levels* this contaminant 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. Your Water System is responsible for providing high quality drinking water, but 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 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 Safe Drinking Water Hotline or at <http://www.epa.gov/safewater/lead>

Treatment Process

SNWA has advanced water treatment facilities designed to provide water meeting SDWA standards.

All the water drawn from Lake Mead is sent to the Alfred Merritt Smith or River Mountains water treatment facilities. As it arrives, the water is treated with chlorine and ozone to kill any potentially harmful microscopic organisms. A multistage filtration system is then used to remove particles from the water. As the water leaves the water treatment facility, additional chlorine is added to protect it on the way to the consumer. The water is also treated to prevent corrosion of the pipelines.

In addition to the SNWA supplied surface water, the Nellis AFB public water system consists of nine active wells. Three of the nine wells are located off base and are currently in compliance with the EPA revised arsenic maximum contaminant level (MCL) of 10 ppb. The remaining six active wells are located on Nellis AFB. Four of these wells have arsenic concentrations exceeding the MCL, but are only used for irrigation. The remaining wells are blended with off-base water; this drops the resultant concentration below the EPA standard for arsenic.

The EPA standard balances the current understandings of the possible health effects against the costs of removing arsenic from drinking water. The EPA continues to research the health effects of low levels of arsenic, which is a mineral known to cause cancer in humans at high concentrations and has been linked to other health effects such as skin damage and circulatory problems.

Furthermore, the water from base wells are chlorinated by Civil Engineering (CE) Utilities and then mixed with the SNWA water. CE Utilities maintains a staff of well-trained professionals who operate and maintain the system daily.

2017 Maximum Contaminant Limit (MCL) Violations

During the 2017 calendar year, Nellis AFB is required to include an explanation of the violation in the table below and the steps taken to resolve the violation with this report.

Type	Category	Analyte	Compliance Period
MCL, AVERAGE	MCL	Total Trihalomethanes (TTHM)	3/1/2017 - 12/31/2017

The water system servicing the west side of NAFB, known as Area 2 exceeded the MCL level for total trihalomethanes (TTHM) according to results from a routine test performed in March 2017 at Nellis AFB. The result was 0.123 milligrams per liter (mg/L) and the MCL is 0.080 milligrams per liter (mg/L). The violation lasted approximately nine months. On 14 March 2017 during Southern Nevada Water Authority (SNWA) bi-monthly water testing, Bldg 10220 had a TTHM level of 0.123 mg/L. Upon further investigation, the cause of the high TTHM level was due to two contributing factors: faulty equipment in the storage tank and the

residual time of water in the piping system. In May 2017, NAFB repaired the aeration system in the tank and reduced the water level in the storage tank from 75% to 55% reducing the residual time of water in the system. In addition, in December 2017 two wells had been repaired and brought online to blend with water reducing the TTHM level in the system. By December 2017, fourth quarter results were reduced to 0.079 mg/L, bringing NAFB into compliance. The EPA requires a MCL based on a running annual average for TTHM of 0.080 mg/L. The average level for the NAFB drinking water system after the installation of the new aeration system was 0.057 mg/L for CY2017.

As a consumer, please be assured the drinking water on NAFB is constantly being monitored (24 hours a day/7 days a week) by the water utilities department and tested regularly by SNWA.

Trihalomethanes (THM) form naturally in a water system when chlorine reacts with organic compounds in the water. The base continually balances the disinfectant level in order to keep the system in equilibrium, much like chlorinating a swimming pool.

Health Information About Water Quality

Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous systems, and may have an increased risk of getting cancer.

Do I need to take special precautions?

No, in most cases; however, some people may be more vulnerable to contaminants in drinking water than the general population. Some elderly, infants, and Immuno-compromised persons undergoing chemotherapy, who have undergone organ transplants, who have HIV/AIDS, or other immune system disorders can be particularly at risk from infections. These individuals should seek advice about drinking water from a health care provider. EPA and the Centers for Disease Control (CDC) guidelines, on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants, are available from the EPA Safe Drinking Water Hotline at 1-800-426-4791 or by visiting the EPA hotline website at water.epa.gov/drink/hotline/index.cfm .

Frequently Asked Questions

Is my tap water safe to drink?

Yes, your tap water meets and surpasses all SDWA standards and is safe to drink. Also, the Alfred Merritt Smith Water Treatment Facility has been recognized by the National Partnership for Safe Water for its efforts to ensure the Southern Nevada's municipal water meets these water quality standards. Water samples are taken from the NAFB water distribution system monthly and analyzed to ensure compliance with standards. Additionally, in 2013 NDEP conducted a sanitary survey of Nellis AFB and concluded the

drinking water system and infrastructure met the state's requirement for a Public Water System to adequately deliver safe drinking water to the consumer, this survey is accomplished every three years.

If tap water is really of good quality, why does it taste the way it does?

Water quality and taste are not always mutually inclusive. The taste of the water can be caused by chlorine used to keep the water safe from bacteria and naturally occurring minerals. It is important to remember, quality is best measured by the concentration of contaminants in the water. For Nellis AFB, we have very few contaminants in our drinking water and those present are well within SDWA limits.

Do I need to use a water treatment system or drink bottled water?

No, unless you wish to improve the taste of your water or remove the minerals causing it to be considered "hard". While many people prefer the taste of bottled water, tap water is subject to more stringent quality standards and is monitored and tested more frequently. Additionally, the cost of the average liter of bottled water is more than 1,000 times the same amount of tap water. The Food and Drug Administration (FDA) establishes regulations contaminants in bottled water; however, these limits do not always coincide with EPA standards. For more information on bottled water quality, call the International Bottled Water Association at 1-800-WATER11 (1-800-92837-11) or by visiting www.bottledwater.org.

Pregnant women and people with medical conditions affecting their immune system should consult a physician to determine whether a supplemental treatment system is appropriate. For additional information on home water treatment systems, contact the SNWA at 702-862-3400 or by visiting www.snwa.com.

How will I be notified if a significant health risk associated with my water quality develops?

This report is considered the appropriate mechanism for notifying the consumer of routine and non-emergency compliance violations. However, certain emergency situations may warrant more active notification efforts, including, but not limited to: additional publications, postings in public places, mass-mailings, or working through other well-established mass-notification systems.

Why is Creech AFB or the NTTR not listed in the CCR? Is the water tested?

Since Creech AFB and the NTTR do not provide housing, water quality monitoring and analysis results are not required to be published in a CCR. Nevertheless, the drinking water systems for Creech AFB and the NTTR are monitored monthly by the BEF and meet and surpass all Safe Drinking Water Act standards.

Additional Information and Input

If you would like a copy of this report or have questions, please contact the 99 ABW Public Affairs office at 702-652-2750, 99ABW.PA2@us.af.mil. Questions and comments can also be mailed to the 99 ABW Public Affairs office at: 99 ABW/PA, 4430 Grissom Ave, Bldg 11, Ste 107 Nellis AFB, NV 89191. The most current source water assessments are available at the BEF office for the Nellis AFB wells, and through SNWA for the water that is provided by SNWA. If there are any future concerns about the quality of water at Nellis AFB, town hall meetings will be held at the base theater or the community center.

For additional information on the quality of your water, call SNWA at 702-862-3400 or go to the SNWA website at http://www.snwa.com/wq/water_quality.html. Information on Nevada's Safe Drinking Water Program is available from the NDEP at 775-687-4670. Or contact the BEF at 702-653-3316 or 99AMDSBio@nellis.af.mil.

General information for drinking water can be found on the EPA website at www.epa.gov/safewater.

Water Quality Data Tables

The table associated with this report lists the drinking water contaminants detected. The presence of contaminants in the water does not necessarily indicate the water poses a health risk. Unless otherwise noted, the data presented in the tables are from testing completed in the 2016 calendar year. The EPA and the State requires Nellis AFB to monitor contaminants at a different frequency because some concentrations do not change frequently.

NAFB 2018 CCR TABLE				NELLIS AIR FORCE BASE DISTRIBUTION SYSTEM ⁽¹⁾			WELL 2 ⁽¹⁾			WELL 8 ⁽¹⁾			RESERVOIR #491 ⁽¹⁾			RESERVOIR #562 ⁽¹⁾			ALFRED MERRITT SMITH WATER TREATMENT PLANT ⁽¹⁾			RIVER MOUNTAINS WATER TREATMENT PLANT ⁽¹⁾			POSSIBLE SOURCES OF CONTAMINATION						
REGULATED CONTAMINANTS	UNT	MCL (EPA Limit)	MCLG (EPA Goal)	MINIMUM	MAXIMUM	AVERAGE	MINIMUM	MAXIMUM	AVERAGE	MINIMUM	MAXIMUM	AVERAGE	MINIMUM	MAXIMUM	AVERAGE	MINIMUM	MAXIMUM	AVERAGE	MINIMUM	MAXIMUM	AVERAGE	MINIMUM	MAXIMUM	AVERAGE							
Alpha Particles	pCi/L	15	0	Entry Point Monitoring Only			5	5	N/A	N/D	N/D	N/A	N/D ⁽²⁾	N/D ⁽²⁾	N/A	N/D ⁽²⁾	N/D ⁽²⁾	N/A	7.9	7.9	7.9	7.3	7.3	7.3	Erosion of natural deposits of certain minerals that are radioactive and may emit a form of radiation known as alpha radiation						
Arsenic	ppb	10	0	Entry Point Monitoring Only			2	2	N/A	3	3	N/A	2 ⁽³⁾	3 ⁽³⁾	3 ⁽⁴⁾	2 ⁽³⁾	3 ⁽³⁾	3 ⁽⁴⁾	1	2	2	2	2	2	Erosion of natural deposits						
Barium	ppm	2	2	Entry Point Monitoring Only			0.1	0.1	N/A	0.1	0.1	N/A	0.1 ⁽³⁾	0.1 ⁽³⁾	N/A	0.1 ⁽³⁾	0.1 ⁽³⁾	N/A	0.1	0.1	0.1	0.1	0.1	0.1	Erosion of natural deposits; discharge from metal refineries; discharge of drilling wastes						
Bromate	ppb	10	0	Treatment Plant Monitoring Only			Treatment Plant Monitoring Only			Treatment Plant Monitoring Only			2			6			4 ⁽⁵⁾			3			11 ⁽⁶⁾			7 ⁽⁵⁾			By-product of drinking-water disinfection with ozone
Copper ⁽⁷⁾	ppm	1.3 ⁽⁸⁾ (Action Level)	1.3	0.05 ⁽³⁾	0.55 ⁽³⁾	0.48 ⁽³⁾ (90th% value)	Distribution System Monitoring Only			DISTRIBUTION SYSTEM MONITORING ONLY			DISTRIBUTION SYSTEM MONITORING ONLY			DISTRIBUTION SYSTEM MONITORING ONLY			DISTRIBUTION SYSTEM MONITORING ONLY			DISTRIBUTION SYSTEM MONITORING ONLY			Corrosion of household plumbing systems; erosion of natural deposits						
Fluoride	ppm	4.0	4.0	0.7	0.8	0.7	0.2	0.2	N/A	0.6	0.6	N/A	0.7 ⁽³⁾	0.7 ⁽³⁾	N/A	0.5 ⁽³⁾	0.5 ⁽³⁾	N/A	0.6	0.8	0.7	0.6	0.8	0.7	0.6	0.8	0.7	Erosion of natural deposits; water additive ⁽⁹⁾			
Free Chlorine Residual	ppm	4.0 ⁽¹⁰⁾ (MRDL)	4.0 ⁽¹⁰⁾ (MRDLG)	ND	3.4	0.8 ⁽⁵⁾	Distribution System Monitoring Only			DISTRIBUTION SYSTEM MONITORING ONLY			DISTRIBUTION SYSTEM MONITORING ONLY			DISTRIBUTION SYSTEM MONITORING ONLY			DISTRIBUTION SYSTEM MONITORING ONLY			DISTRIBUTION SYSTEM MONITORING ONLY			Water additive used to control microbes						
Haloacetic Acids	ppb	60	NA ⁽¹¹⁾	12	48	36 ⁽¹²⁾	Distribution System Monitoring Only			DISTRIBUTION SYSTEM MONITORING ONLY			DISTRIBUTION SYSTEM MONITORING ONLY			DISTRIBUTION SYSTEM MONITORING ONLY			DISTRIBUTION SYSTEM MONITORING ONLY			DISTRIBUTION SYSTEM MONITORING ONLY			By-product of drinking-water disinfection						
Lead ⁽⁷⁾	ppb	15 ⁽⁸⁾ (Action Level)	0	ND ⁽³⁾	11 ⁽³⁾	2 ⁽³⁾ (90th% value)	Distribution System Monitoring Only			DISTRIBUTION SYSTEM MONITORING ONLY			DISTRIBUTION SYSTEM MONITORING ONLY			DISTRIBUTION SYSTEM MONITORING ONLY			DISTRIBUTION SYSTEM MONITORING ONLY			DISTRIBUTION SYSTEM MONITORING ONLY			Corrosion of household plumbing systems; erosion of natural deposits						
Nitrate (as Nitrogen)	ppm	10	10	Entry Point Monitoring Only			0.4	0.4	N/A	0.3	0.3	N/A	0.6 ⁽³⁾	0.6 ⁽³⁾	N/A	0.3 ⁽³⁾	0.3 ⁽³⁾	N/A	0.4	0.5	0.4	0.4	0.6	0.5	0.4	0.6	0.5	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits			
Selenium	ppb	50	50				2	2	N/A	1	1	N/A	2 ⁽³⁾	2 ⁽³⁾	N/A	1 ⁽³⁾	1 ⁽³⁾	N/A	2	3	2	2	3	2	2	3	2	2	3	2	Erosion of natural deposits; discharge from mines; component of petroleum
Total Trihalomethanes	ppb	80	NA ⁽¹¹⁾	48	123 ⁽⁶⁾	84 ⁽¹²⁾⁽¹³⁾	Distribution System Monitoring Only			DISTRIBUTION SYSTEM MONITORING ONLY			DISTRIBUTION SYSTEM MONITORING ONLY			DISTRIBUTION SYSTEM MONITORING ONLY			DISTRIBUTION SYSTEM MONITORING ONLY			DISTRIBUTION SYSTEM MONITORING ONLY			By-product of drinking-water disinfection						
Turbidity	NTU	95% of the samples <0.3 NTU ⁽¹⁴⁾	NA	Treatment Plant Monitoring Only			Treatment Plant Monitoring Only			Treatment Plant Monitoring Only			Treatment Plant Monitoring Only			100% of the samples were below 0.3 NTU. The maximum NTU was 0.082 on December 21, 2017.			100% of the samples were below 0.3 NTU. The maximum NTU was 0.066 on February 1, 2017.			Soil runoff									
Uranium	ppb	30	0	Entry Point Monitoring Only			2	2	N/A	1.4	1.4	N/A	4 ⁽²⁾	4 ⁽²⁾	N/A	2 ⁽²⁾	2 ⁽²⁾	N/A	4	5	4	3	4	4	3	4	4	Erosion of natural deposits			

Footnotes:

- (1) Some Safe Drinking Water Act (SDWA) regulations require monitoring from the distribution system, while other SDWA regulations require monitoring at the entry points to the distribution system. (Alfred Merritt Smith WTP, River Mountains WTP, and NAFB Reservoirs and Wells). During 2017 NAFB Reservoirs 491 and 562 were not in service, Well 2 and Well 8 came on-line in November 2017. All water delivered to NAFB customers from January - November 2017 was from the SNWA WTPs. Water delivered from November forward was from the SNWA WTPs and NAFB Well 2 and Well 8. However, any monitoring done within the past five years at any source must be reported.
- (2) Annual monitoring not required, data from 2014.
- (3) Annual monitoring not required, data from 2015.
- (4) This value is the highest running annual average (RAA) reported in 2015. Reports are filed quarterly.
- (5) This value is the highest running annual average (RAA) reported in 2017. Reports are filed quarterly.
- (6) Maximum levels greater than the MCL are allowable as long as the running annual average does not exceed the MCL.
- (7) Samples are from the NAFB customers' taps.
- (8) Lead and copper are regulated by a Treatment Technique (TT) that requires systems to control the corrosiveness of their water. If more than 10% of tap-water samples exceed the action level, water systems must take additional steps. For copper the action level is 1.3 ppm, and for lead it is 15 ppb.
- (9) By state law, the Southern Nevada Water Authority (SNWA) is required to fluoridate the municipal water supply. This law is not applicable to groundwater.
- (10) Chlorine is regulated by MRDL, with the goal stated as a MRDLG.
- (11) No collective MCLG but there are MCLGs for some of the individual contaminants. Haloacetic Acids: dichloroacetic acid (0), trichloroacetic acid (300 ppb); Trihalomethanes: bromodichloromethane (0), bromoform (0), dibromochloromethane (60 ppb).
- (12) This value is the highest locational running annual average (LRAA) reported in 2017. Reports are filed quarterly.
- (13) NOTICE: Please consult the Nevada Division of Environmental Protection regarding CCR reporting requirements for your TTHM violation in 2017.
- (14) Turbidity is regulated by a Treatment Technique (TT) requirement - 95% of all samples taken after filtration each month must be less than 0.3 NTU. Maximum turbidity cannot exceed 1.0 NTU.

Definitions:

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

Disinfection by-product (DBP): A substance created by the chemicals or processes used to destroy potentially harmful microorganisms.

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 allow for a margin of safety.

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 contamination.

Treatment Technique (TT): A required process intended to reduce the level of a contaminant in drinking water.

Millirem (mrem): one-thousandth of a rem (roentgen-equivalent-man), which is a unit of absorbed radiation dose that is adjusted for the biological effects equal to one rad of 250 kilovolt roentgen rays (dental roentgen rays require less than 100 kilovolts).

N/A: Not applicable

N/D: Not detected. Does not equate to zero, but refers to an amount below analytical reporting limits.

Nephelometric Turbidity Unit (NTU): A measurement of water's clarity.

Part per billion (ppb): A unit used to describe the levels of detected contaminants. Equivalent to 1 cent in \$10 million.

Part per million (ppm): A unit used to describe the levels of detected contaminants. Equivalent to 1 cent in \$10,000.

Picocuries per liter (pCi/L): A measure of the radioactivity in water. Low levels of radiation occur naturally in many water systems, including the Colorado River.

Running annual average: Based on the monitoring requirements, the average of 12 consecutive monthly averages or the average of four consecutive quarters.

Turbidity: A measure of water clarity, which serves as an indicator of the treatment facility's performance.