

**2023 Annual Water Quality Report
Rifle Range Water Distribution System**

PWSID # 04-67-046



Marine Corps Installations East-Marine Corps Base Camp Lejeune (Camp Lejeune) is pleased to present the Annual Water Quality Report (Consumer Confidence Report). This report provides details about where your water comes from, what it contains, and how it compares to standards set by regulatory agencies.

Camp Lejeune is committed to providing you with information because informed customers are our best allies.

Source Water

The Camp Lejeune Rifle Range distribution system is supplied with drinking water from the Onslow Water and Sewer Authority (ONWASA), PWSID # 04-67-035. Ten water supply wells provide groundwater from the Castle Hayne Aquifer to ONWASA's Dixon Water Treatment Plant. There, the raw water is treated by filtration, softening, and disinfection practices prior to entering the Rifle Range's distribution system. A copy of ONWASA's Water Quality Reports can be accessed at:

<https://www.onwasa.com/177/Forms-Applications-Reports>

The North Carolina Department of Environmental Quality, Public Water Supply Section, Source Water Assessment Program (SWAP) assessed drinking water sources across North Carolina to determine the susceptibility of each drinking water source to potential contaminant sources. More information on the SWAP, including source water assessment reports, can be found on the web at:

<https://www.ncwater.org/?page=600>



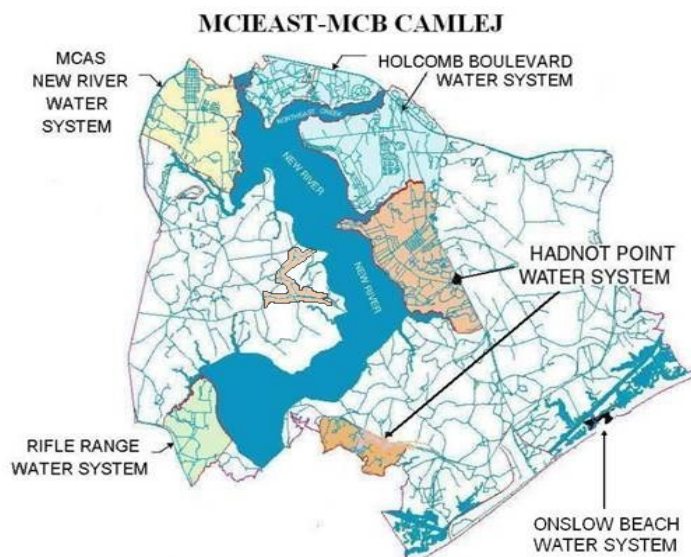
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Important Drinking Water Terms and Definitions

Term	Definition
AL	Action Level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
HAA	Halo Acetic Acids: Chlorine from the water disinfection process can react with organic matter and small amounts of bromide present in water to produce various HAAs.
MCL	Maximum Contaminant Level: The highest level of a contaminant that is allowed in drinking water. MCL's are set as close to the MCLG's 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. MCLG's 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 Disinfection Level Goal: The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLG's do not reflect the benefits of the use of disinfectants to control microbial contaminants.
NA	Not Applicable: Information not applicable / not required for that particular water system or for that particular rule.
SDWA	Safe Drinking Water Act: The federal law that protects public drinking water supplies throughout the nation.
TT	Treatment Technique: A required process intended to reduce the level of a contaminant in drinking water.
UCMR	Unregulated Contaminant Monitoring Rule: Monitoring used by the EPA to collect data for contaminants that are suspected to be present in drinking water and do not have health-based standards set under the SDWA.

Unit Descriptions

Term	Definition
ppm	ppm: parts per million, or milligrams per liter (mg/L)
ppb	ppb: parts per billion, or micrograms per liter (ug/L)
ppt	ppt: parts per trillion, or nanograms per liter (ng/L)



Water Quality Data

The Rifle Range water distribution system met all Federal and State drinking water standards in 2023. Camp Lejeune routinely monitors drinking water quality for more than 190 substances that may be in your drinking water. The information below lists all of the regulated drinking water substances that were detected in recent water quality sampling. The detected substances do not necessarily affect health. Unless otherwise noted, the information below is from testing done January 1 through December 31, 2023. The EPA and the State allow us to monitor certain substances less than once per year because the concentrations of those substances are not expected to vary significantly from year to year. Some of the information below, though representative of the water quality, is more than one year old. Other information presented in this report is from recent monitoring. Although many more substances were tested, only those substances listed below were detected in your water.

Regulated Contaminants	MCLG or MRDLG	MCL, TT OR MRDL	Amount Detected	Range		Year Sampled	Violations	Typical Source
				Low	High			
Disinfectants & Disinfection By-Products								
Chlorine (ppm)	4	4	0.84 ¹	0.30	1.24	2023	No	Water additive used to control microbes
Haloacetic Acids (HAA5) (ppb)	NA	60 (LRAA)	38 ²	34	41	2023	No	By-product of drinking water disinfection
Total Trihalomethanes (TTHMs) (ppb)	NA	80 (LRAA)	70 ²	57	71	2023	No	By-product of drinking water disinfection

¹ Result reported is the average of the sample results from the previous four quarters. Minimum of 0.2 ppm disinfectant residual concentration required.

² Result reported is the highest locational running annual average (LRAA), which is the average of the sample analytical results for samples taken at a particular monitoring location during the previous four calendar quarters under the Stage 2 Disinfection and Disinfectant Byproducts Rule.

Inorganic Contaminants

Fluoride (ppm)	4	4	0.80 ³	NA		2020	No	Erosion of natural deposits, water additive which promotes strong teeth, discharge from fertilizer and aluminum factories.
Sodium (ppm) ⁴	NA	NA	38.1 ³	NA		2020	No	Naturally occurring in the environment. Adequate levels of sodium are required for good health.

³ Data obtained from sampling conducted at ONWASA's Dixon Water Treatment Plant prior to delivery to the Rifle Range distribution system.

⁴ Sodium is optional to report.

Regulated Contaminants	MCLG or MRDLG	MCL, TT or MRDL	Amount Detected	Range		Year Sampled	Violations	Typical Source
				Low	High			

Microbiological Contaminants

Total Coliform Bacteria	0	One positive sample per month ⁵	0 ⁶	N/A	2023	No	Naturally present in the environment; used as an indicator that other, potentially harmful bacteria may be present.
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⁵ For a water system collecting less than 40 samples per month.

⁶ There were no coliforms found in samples.

Regulated Contaminants	MCLG	AL	Amount Detected	# Samples Exceeding AL	Year Sampled	Exceeds AL	Typical Source
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Inorganic Contaminants

Copper (ppm)	1.3	1.3	0.727 ⁷	0	2022	No	Corrosion of household plumbing systems, erosion of natural deposits
Lead (ppb)	0	15	< 3 ⁷	0	2022	No	Corrosion of household plumbing systems, erosion of natural deposits

⁷ Amount Detected represents the 90th percentile level of all samples detected and is the number used to determine if Camp Lejeune is in compliance with Federal, State, and DOD guidance.

Lead and Drinking Water

Exposure to lead in drinking water can cause serious health effects in all age groups. Infants and children can have decreases in IQ and attention span. Lead exposure can lead to new learning and behavior problems or exacerbate existing learning and behavior problems. The children of women who are exposed to lead before or during pregnancy can have increased risk of these adverse health effects. Adults can have increased risk of heart disease, high blood pressure, kidney or nervous system problems.

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. Camp Lejeune's Rifle Range water distribution 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 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 (1-800-426-4791) or at:

<https://www.epa.gov/safewater/lead>

Additional information about lead and drinking water can be viewed on the web at:

<https://www.lejeune.marines.mil/Offices-Staff/Environmental-Mgmt/Additional-Resources/>

UCMR5 Monitoring

ONWASA conducted additional monitoring as part of Phase 5 of the EPA's Unregulated Contaminant Monitoring Rule (UCMR5). The purpose of unregulated contaminant monitoring is to assist EPA in determining the occurrence of unregulated contaminants in drinking water and whether future regulations are warranted.

This table lists all of the unregulated constituents that were detected during UCMR5 sampling by ONWASA. For more information about the Unregulated Contaminant Monitoring Rule please visit:

<https://www.epa.gov/dwucmr>

UCMR5 Contaminants	Average Level	Range		Year Sampled
		Low	High	
Perfluorobutanesulfonic acid (PFBS) (ug/L)	0.0015 I	ONLY DETECTION		2023
Lithium (ug/L)	26	22.5 I	29.5	2023
Perfluorohexanoic acid (PFHxA) (ug/L)	0.0016 J	ONLY DETECTION		2023

Analyte Qualifiers

I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.

J - Estimated concentration above the method detection limit and below the method reporting limit.

Voluntary Sampling Program

In addition to what is required by regulation, and as part of our commitment to ensure that we are providing the safest, most reliable drinking water possible, Camp Lejeune has monitored drinking water for substances found in explosives (nitroaromatics, nitramines, nitrate esters) and perchlorate in finished water since 2004, and raw groundwater starting in 2011.

These substances, commonly known as "munitions constituents", are used in the manufacture of explosives or are the breakdown products of compounds used in explosives. Voluntary water sampling in 2023 detected trace amounts of two munitions constituents in the finished water. These trace amounts are not a health concern. There are no MCLs established for munitions constituents.

Additionally, Camp Lejeune sampled finished water for Volatile Organic Compounds and Synthetic Organic Compounds. This sampling was done voluntarily above what is required by current regulations and Department of Defense (DOD) requirements. Results of all voluntary testing were within Federal, State, and DOD drinking water guidance.

Detections for voluntary sampling conducted throughout the Rifle Range water system can be viewed on the web at:

<http://www.lejeune.marines.mil/Offices-Staff/Environmental-Mgmt/Annual-Reports/Voluntary-Monitoring-Detected-Contaminants/>

Per- and polyfluoroalkyl Substances (PFAS)

What are per- and polyfluoroalkyl substances and where do they come from?

Per- and polyfluoroalkyl substances (PFAS) are a group of thousands of man-made compounds. PFAS have been used in a variety of industrial and consumer products around the globe, including the United States, since the 1940s. PFAS have been used to make coatings and products that are used as oil and water repellants for carpets, clothing, paper packaging for food, and cookware. They are also contained in some foams (aqueous film-forming foam (AFFF)) currently used for fighting petroleum fires at airfields and in industries. PFAS compounds are persistent in the environment, and some are persistent in the human body - meaning they do not break down and they can accumulate over time.

Is there a federal or North Carolina state regulation for PFAS in drinking water?

On April 26, 2024, the United States Environmental Protection Agency (EPA) published Maximum Contaminant Levels (MCLs) for some PFAS. See table below.

Compound	Final MCLG	Final MCL (enforceable levels)
PFOA	0	4.0 ppt
PFOS	0	4.0 ppt
PFHxS	10 ppt	10 ppt
PFNA	10 ppt	10 ppt
HFPO-DA (commonly known as Gen-X)	10 ppt	10 ppt
Mixtures containing two or more of: PFHxS, PFNA, HFPO-DA, and PFBS	1 (unitless) Hazard Index (HI)	1 (unitless) HI

ppt = parts per trillion or nanograms per liter (ng/L)

$$HI\ MCL = \left(\frac{[HFPO-DA_{water}]}{[10\ ppt]} \right) + \left(\frac{[PFBS_{water}]}{[2000\ ppt]} \right) + \left(\frac{[PFNA_{water}]}{[10\ ppt]} \right) + \left(\frac{[PFHxS_{water}]}{[10\ ppt]} \right) = 1$$

Within three years after the MCL publication date, the EPA requires the start of sampling in accordance with the new MCLs, and the EPA requires implementation of any required treatment within five years after the publication date.

The EPA MCLs do not apply for the 2023 calendar year. However, the Department of Defense (DoD) proactively published policies to monitor drinking water quality for certain PFAS at all service owned and operated water systems at least every two years. The DoD policy stated that if water sampling confirmed that drinking water contained perfluorooctanoic acid (PFOA) or perfluorooctane sulfonic acid (PFOS) at individual or combined levels greater than the 2016 EPA health advisory level of 70 parts per trillion (ppt), the water systems would immediately reduce the PFOS or PFOA levels. For levels less than 70 ppt but above the 4 ppt (draft at the time of policy publication), the DoD policy committed to planning for reducing the levels after the EPA's published MCLs took effect.

Has Camp Lejeune tested its water for PFAS in 2023?

Yes. As part of Camp Lejeune's continuing voluntary sampling program, samples are collected twice a year from the Base water treatment plants. ONWASA provides drinking water to the Rifle Range and tests it for PFAS. Test results for PFAS compounds, including PFOS and PFOA, have been below the EPA MCLs.

For information on ONWASA's sampling results please visit:

<https://www.onwasa.com/DocumentCenter/View/4644>

For more information about PFAS please visit:

<https://www.defense.gov/pfas/>

Substances That Could Be in the Water

To ensure that tap water is safe to drink, EPA prescribes regulations which limit 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 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 contaminants does not necessarily indicate that the water poses a health risk. 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.

Substances that may be present in the 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 or 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 compounds, which are by-products 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 or be the result of oil and gas production and mining activities.

More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline (800-426-4791).

Important Health Information

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, persons with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These persons or their parents or guardians should seek advice about drinking water from health care providers. EPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

Help Protect Your Water

Protection of drinking water is everyone's responsibility. You can help protect our drinking water sources in several ways: dispose of chemicals properly, take used motor oil to recycling centers, volunteer to participate in group efforts to protect our water sources, etc.

Questions?

For more information about this report, or for any questions relating to your drinking water, please call David Towler (EMD) at (910-451-9385).

If you prefer a paper copy of the 2023 Water Quality Report, please call (910-451-5003).



SOURCE WATER ASSESSMENT PROGRAM (SWAP) RESULTS

The North Carolina Department of Environmental Quality (NCDEQ), Public Water Supply Section (PWSS), Source Water Assessment Program (SWAP) conducted assessments for all drinking water sources across North Carolina. The purpose of the assessments was to determine the susceptibility of each drinking water source (wells) to Potential Contaminant Sources (PCSs). The results of the assessment are available in SWAP reports that include maps, background information, and a relative susceptibility rating of Higher, Moderate or Lower. The relative susceptibility rating of each source for the Rifle Range Water Distribution System was determined by combining the contaminant rating (number and location of PCSs within the assessment area) and inherent vulnerability rating (i.e., characteristics or existing conditions of the well or watershed and its delineated assessment area). The assessment findings based on the ONWASA SWAP report completed on September 09, 2020 are summarized in the table below:

ONWASA Drinking Water Supply Wells	
Source Name	Susceptibility Rating
Dixon Well 1	Lower
Dixon Well 2	Lower
Dixon Well 3	Lower
Dixon Well 5	Lower
Dixon Well 6	Lower
Dixon Well 7	Moderate
Dixon Well 8	Lower
Dixon Well 9	Lower

It is important to note that susceptibility ratings do not imply higher or lower quality water, only the system's potential to become contaminated by PCSs in the assessment area.

The complete SWAP report for the Rifle Range Water Distribution System or ONWASA source water may be viewed on the web at:

<http://www.ncwater.org/?page=600>

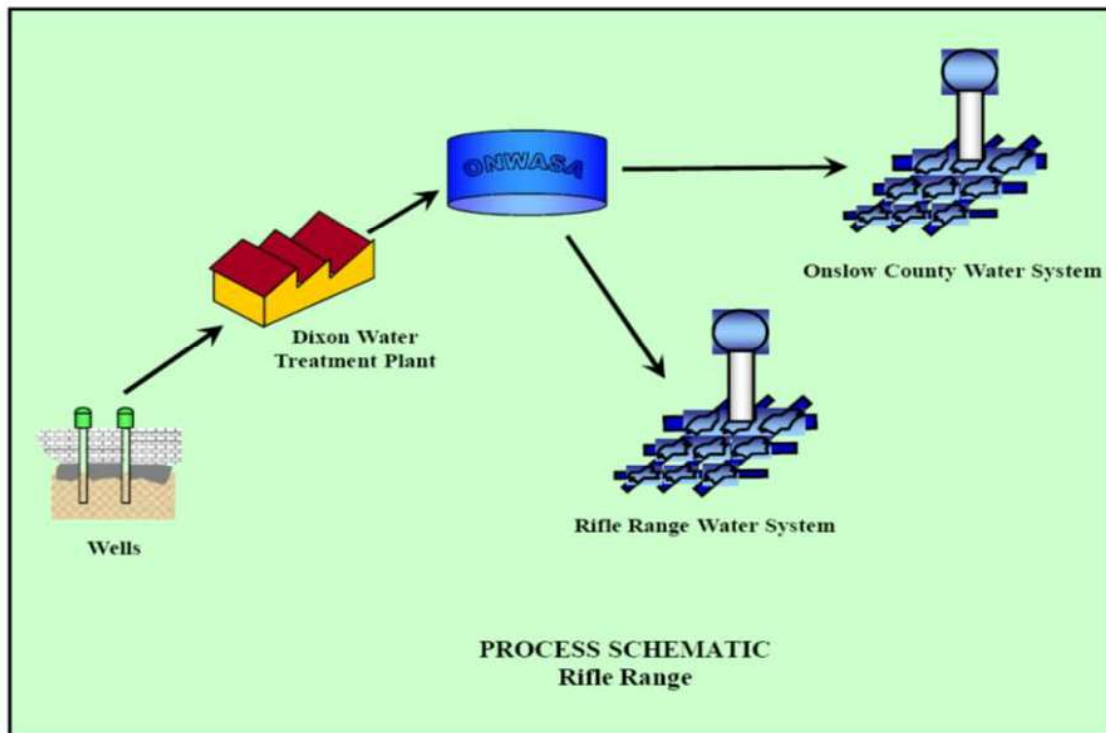
In order to access this report you will need to enter either the system name or PWS ID. Both have been provided below. Please note that because SWAP results and reports are periodically updated by the PWS Section, the results available on this website may differ from the results that are available at the time this report was prepared.

System Name: USMC Lejeune - Rifle Range
PWS ID: 0467046



Rifle Range Water Treatment Process

Water from the Rifle Range is purchased from the Onslow Water and Sewer Authority (ONWASA). ONWASA has installed Granular Activated Carbon (GAC) filters that will assist in reducing TTHM levels.



The current ONWASA Water Quality Report can be accessed at <http://www.onwasa.com>.

WATER CONSERVATION

Did you know that the average U.S. household uses approximately 400 gallons of water per day or 100 gallons per person per day? You can play a role in conserving water by becoming conscious of the amount of water your household is using and by looking for ways to use less whenever possible. It is not hard to conserve water. Small changes can make a big difference. Here are a few tips:

- Take short showers – a 5 minute shower uses 4 to 5 gallons of water compared to up to 50 gallons for a bath.
- Run your clothes washer and dishwasher only when they are full. You can save up to 1,000 gallons a month.
- Shut off water while brushing your teeth, washing your hair and shaving and save up to 500 gallons a month.
- Check every faucet in your home for leaks. Just a slow drip can waste 15-20 gallons a day.
- Check your toilets for leaks by putting a few drops of food coloring in the tank. Watch for a few minutes to see if the color shows up in the bowl. It is not uncommon to lose up to 100 gallons a day from an invisible toilet leak.
- Use a water-efficient showerhead. They're inexpensive, easy to install, and can save you up to 750 gallons a month.
- Water plants only when necessary and adjust sprinklers so only your lawn is watered. Apply water only as fast as the soil can absorb it and during the cooler parts of the day to reduce evaporation.
- Don't run the hose while washing your car. Use a bucket of water and a quick hose rinse at the end or wash vehicles at a carwash that recycles its water. Saves 150 gallons each time.

Teach your kids about water conservation to ensure a future generation that uses water wisely.

Visit www.epa.gov/watersense for more information.

Remember, when you conserve water you also conserve energy!

