



Marine Corps Base Quantico

2013 Annual Drinking Water Quality Report

Mainside Water System PWSID 6153675



Introduction

Marine Corps Base Quantico, GF, Installation and Environment Division is pleased to present the Mainside Annual Water Quality Report for 2013. This report is designed to inform you about the quality of water and services we deliver to you every day.

Our constant goal is to provide you, the consumer, with a safe and dependable supply of drinking water.

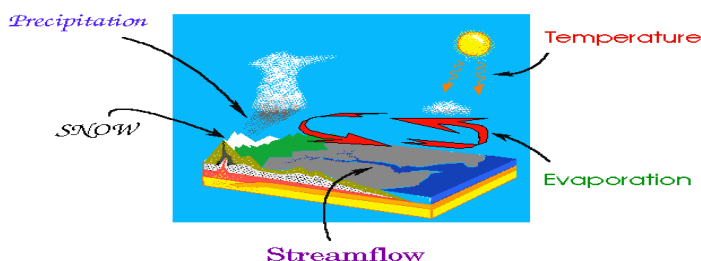
We are committed to ensuring the quality of your water. To help us meet this goal, we have established a Water Quality Response Team. Personnel from the Base Naval Health Clinic join with our Physical Science Technician, to respond to customer concerns and water quality questions. Together, they have the resources to test the chemical and bacteriological quality at the consumers tap.

Our Mainside water (PWSID No. 6153675) comes from protected surface water sources. The water is processed at the Mainside Water Treatment Plant.

Summary

The Mainside Water Treatment Plant routinely monitors for constituents in your drinking water according to State and Federal laws. This report shows the results of our monitoring for the period **January 1 through December 31, 2013.**

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 and in some cases radioactive material and can pick up substances resulting from the presence of animals or from human activity.



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 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 byproducts 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.

In order to ensure that tap water is safe to drink, US Environmental Protection Agency (US EPA) prescribes regulations that 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.

Drinking water, including bottled water, may reasonably be expected to contain at least a small amount of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about drinking water contaminants and potential health effects can be obtained by calling the US EPA's Safe Drinking water Hotline at 1-800-426-4791 or visiting their website at <http://water.epa.gov/drink/index.cfm>.

The Facts

This report contains information on all regulated contaminants found in your drinking water. Additionally, over 85 water tests are performed for a variety of contaminant not found in the water delivered to the Base.

Maximum Contaminant Levels (MCL's) are set at very stringent levels by the US EPA. In developing the standards USEPA assumes that the average adult drinks 2 liters of water each day throughout a 70-year life span. US EPA generally sets MCL's at levels that will result in no adverse health effects for some contaminants or a one-in-ten-thousand to one-in-a-million chance of having the described health effect for other contaminants.

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The VDH conducted a source water assessment in 2002. The purpose was to determine the relative susceptibility of the source water to activities in the watershed. Our source water was calculated to have a high susceptibility to contamination due to ongoing Base activities. There was no evidence of contamination of the water source in any of our testing.

Microbial Analysis

Total Coliform: *Coliforms* are bacteria that are present naturally in the environment and are used as an indicator that other, potentially harmful bacteria, may be present.

When Coliform bacteria are found, special follow-up tests are done to determine if harmful bacteria are present in the water supply. If the limit is exceeded, the water supplier must notify the public by newspaper, radio, or television.

We are pleased to announce the Base was in compliance.

The Distribution System

We encourage our customers to contact us to report their observations. At that time, we will visit the site and determine if we need to run additional tests. If you have any questions about this report or concerning your water utility, please contact Mr. Larry Weedon, Utility Manager at (703) 784-2246.



Water Plant Upgrades

Work started March 2014 to inspect the interior of filters, make needed repairs, recoat interior of filters and replace the filter media. This work is required so the Base can continue to meet the EPA Standards for individual filter turbidity's. Included in the referenced contract is additional treatment equipment and updated monitoring devices.

Should Some People Take Special Precautions?

Some people may be more vulnerable to contaminants in drinking water than the general population. Immune system compromised persons such as persons with cancer undergoing chemotherapy, people who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly and infants can be partially at risk from infections. These people should seek advice about drinking water from their health care providers. US EPA/Center for Disease Control guidelines on appropriate means to lessen the risk of infection by cryptosporidium and other microbiological contaminants are available from the US EPA

Safe Drinking Water Hotline at 1-800-426-4791. We constantly monitor the water supply for various contaminants.

We strongly recommend that our customers not use water from the hot water tap for consumption.

Any contaminants found in the water may accumulate in the hot water tank. This would be true anywhere, regardless of the water source. This does not mean that there is anything wrong with our drinking water. All water tests are conducted on water from the cold-water tap. Our concern is that the water quality is unknown when water from the hot-water tap is consumed. We believe you are better served by heating cold-water for this purpose.



Lead and Copper

During August and September 2012, the Base completed testing for Lead and Copper in the distribution system. Samples from thirty sites were tested according to an approved sampling plan. All samples were below US EPA Action Level (15 ppb). As a result, the next sample event for lead and copper is scheduled in 2015.

More information about drinking water contaminants and potential health effects can be obtained by calling the USEPA's Safe Drinking water Hotline at 1-800-426-4791 or visiting their website at <http://water.epa.gov/drink/index.cfm>. 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. Marine Corps Base Quantico 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 15 to 30 seconds, until it becomes cold or reaches a steady temperature before using the 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 US EPA's Safe Drinking water Hotline at 1-800-426-4791 or visit <http://water.epa.gov/safewater/lead>.

Additional Tests and Monitoring Unregulated Contaminant Monitoring Rule 2 (UCMR2)

The Safe Drinking Water Act (SDWA), as amended in 1996, requires the US EPA to establish criteria for a program to monitor unregulated contaminant and publish a list of contaminants to be monitored every five years. US EPA published the first set of contaminants in 1999. This final regulation meets the SDWA requirement by publishing the next set of unregulated contaminants to be monitored and the requirements for

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such monitoring. This final rule describes a design for second Unregulated Contaminant Monitoring Cycle (UCMR2) of 2007-2011. US EPA is requiring the monitoring of 25 chemicals using 5 different analytical methods. UCMR 2 monitoring began in 2008 and was completed in 2010.

Implementation of this final rule benefits the environment by providing USEPA and other interested parties with scientifically valid data on the occurrence of the contaminants in drinking water; thereby, permitting the assessment of the population potentially being exposed and the levels of exposure. These results are the primary resource of occurrence and provide exposure data for the US EPA to determine whether to regulate these contaminants.

UCMR2 testing for 2008 through 2010 indicates all constituents (e.g. flame retardants, pesticides, explosives) tested are non-detectable per US EPA guidelines.

Individual Distribution System Evaluation (IDSE)

In March 2010 USEPA and VDH approved the Base IDSE plan. The new sampling schedule started October 2013. This evaluation of the distribution system will allow the Base to better monitor disinfection byproducts in the distribution system. Once this information has been obtained and evaluated, the Base will know where to make necessary changes in the distribution system or treatment process.



Conclusion

Thank you for allowing us to continue providing your family with clean, quality water this year. In order to maintain a safe and dependable water supply we sometimes need to make improvements that benefits all of our customers.

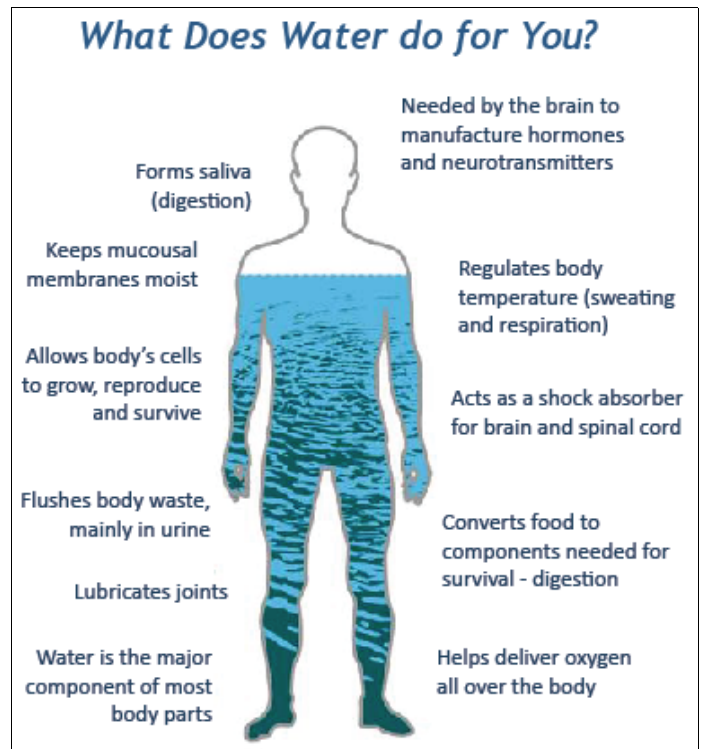
Water mains and fire hydrants are flushed twice a year. This may cause temporary water discoloration. We apologize for any inconvenience. Our goal is to provide water of excellent quality to every customer. We in the Utilities Section, work around the clock to provide top quality water to every tap.

Our customers can help protect themselves and our water system by careful use of this resource, which is the heart of our community, our way of life and our children's future.

Stay Hydrated!

Our energy level is greatly affected by the amount of water we drink. A 5% drop in body fluids will cause a 25-30% loss of energy in the average person.

- If you lose 5% of your body's water, you will likely run a fever.
- If you lose 10% of your body's water, you will have difficulty moving and may not be able to move at all.
- Losing 12% of your body's water can result in death.
- Most people can exist for over 30 days without food, but only 4-7 days without water. Even mild dehydration will slow down metabolism as much as 3%.
- One glass of water will reduce midnight hunger pangs for most people.
- Water leaves the stomach five minutes after consumption.
- Lack of water is one of the primary triggers of daytime fatigue.
- Preliminary research indicates that 8-10 glasses of water a day could significantly ease back and joint pain for up to 80% of sufferers.
- A mere 2% drop in body water can trigger fuzzy, short-term memory, trouble with basic math, and difficulty focusing on the computer screen or on a printed page.



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| Microbiological Results | MCLG | MCL | Percent less than 5% | Highest no. | Number of Monthly Samples | Violation | Major source in drinking water. |
|-------------------------|------|--|----------------------|-------------|---------------------------|-----------|---------------------------------------|
| Total Coliform Bacteria | 0 | One positive sample per month | Positive 0 | NA | 15 | No | Naturally present in the environment. |
| Fecal Coliform | 0 | A routine sample & a repeat sample are coliform positive & one is also fecal coliform. | NA | NA | NA | No | Naturally present in the environment. |

May not exceed one positive sample per month. No positive samples for 2013.

| Primary Regulated Contaminants | | | | | | | | |
|--------------------------------|------|-----|-----------------|------------------------|--------------------------------------|----------------|-----------|--|
| Metals (units) | MCLG | AL | 90th Percentile | Number of sites tested | No. of Sites Exceeding action level. | Range | Violation | Source |
| Copper (ppm) | 0 | 1.3 | 0.239 | 30 | 0 | 0.0225 - 0.476 | No | Corrosion of household plumbing systems. |
| Lead (ppb) | 0 | 15 | 3.94 | 30 | 0 | <2.0 - 10.1 | No | Corrosion of household plumbing systems. |

The Lead and Copper results are from August and September 2012; next test are to be conducted in June-August 2015. All samples are below the EPA Safe Drinking Water Act-Action Level.

| Parameter (units) Samples collected from distribution system. | MCLG | MCL | Average | Range | Violation | Source |
|---|------|-----|---------|-------------|-----------|--|
| Fluoride (ppm) | 4 | 4 | 0.75 | 0.48 - 1.09 | No | Added to the drinking water to promote dental health; erosion of natural deposits; discharge from fertilizer and aluminum factories. |
| Barium (ppm) | 2 | 2 | 0.022 | N/A | No | Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits. |
| Nitrate-Nitrite (ppm) | 10 | 10 | 0.06 | N/A | No | Leaching from septic tanks, fertilizer, erosion of natural deposits. |

| Parameter (units) Samples collected from distribution system. | MRDLG | MRDL | Average | Range | Violation | Source |
|---|-------|------|---------|-------------|-----------|--|
| Chlorine (ppm) | 4 | 4 | 1.33 | 0.10 - 3.10 | No | Added to drinking water as a disinfectant. |

| Radiological (units) | MCLG | MCL | Average | Range | Tested | Violation | Source |
|----------------------|------|-----|---------|--|--------|-----------|------------------------------|
| Gross Beta (pCi/L) | 0 | 50* | NA | <1.2 - Below minimum detectable level. | 2013 | No | Erosion of natural deposits. |
| Radium 228 (pCi/L) | 0 | 5 | NA | <0.7 - Below minimum detectable level. | 2013 | No | Erosion of natural deposits. |
| Gross Alpha (pCi/L) | 0 | 15 | NA | <0.5 - Below minimum detectable level. | 2013 | No | Erosion of natural deposits. |

* EPA considers 50 pCi/l to be the level of concern. Test results from 2013; because results are so low the next tests currently scheduled for 2019.

| Disinfection By-Products (units) | MCLG | MCL | Quarterly Running Annual Average | Range | Violation | Source |
|-----------------------------------|------|-----|----------------------------------|---|-----------|--|
| Trihalomethane THM (ppb) | 0 | 80 | 80 | 19 - 112 Included in low to high range are Stage 1 and Stage 2 DBP results. | No | By-product of drinking water disinfection. |
| Haloacetic Acids Group HAAs (ppb) | 0 | 60 | 50 | 33 - 60 Included in low to high range are Stage 1 and Stage 2 DBP results. | No | By-product of drinking water disinfection. |

| Parameter | MCL | Running Annual Average | Range | Violation | Source |
|-----------------------|-----|------------------------|---------------|-----------|-----------------------------------|
| Total Organic Carbons | TT | 1.49% | 0.72% - 1.84% | No | Naturally present in environment. |

Total Organic Carbon has no health effects. It provides a medium for the formation of disinfection byproducts. These byproducts include trihalomethanes and haloacetic acids. Compliance with the treatment technique reduces the formation of these disinfection byproducts.

Treatment Technique (TT) Compliance with treatment technique is a removal ratio of 1.0 and higher. The ratio of removal is the actual Total Organic Carbon removed between the source water and treated water.

| Parameter (units) | MCL | Annual avg. | Range | Max. Detected | Lowest percentage of Monthly samples Meeting Limit | Source |
|-------------------|-----|-------------|-------------|---------------|--|--------------|
| Turbidity (NTU) | TT | 0.05 | 0.01 - 0.59 | 0.59 | December values were 99.7% | Soil runoff. |

Treatment Technique measures Turbidity levels during the treatment process after the water is filtered, but before disinfection. The turbidity level of filtered water shall be less than or equal to 0.3 NTU in at least 95 percent of the monthly measurements and at no time exceed 1 NTU.

| Secondary Regulated Contaminants | | | | | |
|----------------------------------|------|---------|-----------|---|--|
| Secondary Contaminants (units) | SMCL | Results | Violation | Source | |
| Manganese (ppm) | 0.05 | 0.015 | No | Naturally present in the environment. May cause water discoloration. | |
| Chloride (ppm) | 250 | 8.5 | No | Naturally present in environment. | |
| Sulfate (ppm) | 250 | 31.8 | No | Naturally present in the environment; addition of water treatment substances. | |
| Total Dissolved Solid (ppm) | 500 | 98 | No | Naturally present in environment. | |

| Non Regulated Substance Monitored | | | | | |
|------------------------------------|------|-----|---|---|--|
| Non Regulated Contaminants (units) | MCLG | MCL | Results - Sample collected from Point of Entry into drinking water distribution system. | Source | |
| Bromodichloromethane (ppb) | NRL | NRL | 2.5 | By-product of drinking water disinfection. | |
| Chloroform (ppb) | NRL | NRL | 23 | By-product of drinking water disinfection. | |
| Sodium (ppm) | NRL | NRL | 25.1 | Naturally present in the environment; addition of water treatment substances. | |

Key to acronyms and abbreviations.

| | |
|--|---|
| Non-Detects (ND) | Laboratory analysis indicates that the constituent is below the detection level. |
| Parts Per Million (ppm) / Milligrams Per Liter (mg/L) | Parts per million and milligrams per liter are the same. One part per million corresponds to one minute in two years, or a penny in \$10,000. |
| Parts per billion (ppb) / Micrograms per liter (ug/L) | Parts per billion and Micrograms per liter are the same. One part per billion corresponds to one minute in 2000 years, or a penny in \$10,000,000. |
| Picocuries Per Liter (pCi/l) | Picocuries per liter is a measure of the radioactivity in the water. |
| Nephelometric Turbidity Unit (NTU) | Nephelometric turbidity unit is a measure of the clarity of water. Turbidity in excess of 5 NTU is just visibly cloudy with the naked eye. |
| Action Level (AL) | Concentration of a contaminant which, if exceeded, triggers treatment or other requirements a water system must follow. |
| Treatment Techniques (TT) | A treatment technique is a required process intended to reduce level of contaminant in drinking water |
| Maximum Contaminant Level (MCL) | The highest level of a contaminate that is allowed in drinking water. MCL's are set as close to the MCLG's as feasible using the best available treatment technology |
| Maximum Contaminant Level Goal (MCLG) | The "Goal" (MCLG) is the level of a contaminant in drinking water below which there is no known or expected risk to MCLG's allow for a margin of safety. |
| Maximum Residual Disinfection Level (MRDL) | The highest level of disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfection is necessary for control of microbial contaminants. |
| Maximum Residual Disinfection Level Goal (MRDLG) | The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLG does not reflect the benefits of the use of disinfectants. |
| No Regulatory Limit (NRL) | A substance or chemical constituent that is of interest but currently does not have a regulatory limit or concentration. |