



GODDARD SPACE FLIGHT CENTER
WALLOPS FLIGHT FACILITY
MAIN BASE WATERWORKS

2011 Annual Drinking Water Quality Report
for 2010 data

This Annual Drinking Water Quality Report or "Consumer Confidence Report" for Calendar Year (CY) 2010 is designed to inform you about the drinking water quality on Wallops Flight Facility's (WFF) Main Base. Our goal is to provide a safe, dependable drinking water supply. The drinking water must meet Federal and State requirements as administered by the U.S. Environmental Protection Agency (EPA) and the Virginia Department of Health (VDH).

If you have questions about this report or wish to obtain additional information about any aspect of your drinking water, please contact: **Owen Hooks of the WFF Environmental Office at (757) 824-1941 or Richard.O.Hooks@nasa.gov**

General Information

As water travels over the ground surface or through the soil, it dissolves naturally occurring minerals. Water can also pick up substances resulting from the presence of animal or human activities. All drinking water, including bottled drinking water, may reasonably be expected to contain very small amounts of these substances. The presence of these substances does not necessarily indicate that the water poses a health risk.

The sources of all drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. Contaminants that may be present in source water include:

- (1) Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- (2) Inorganic contaminants, such as salts and metals, which can be naturally-occurring or result from storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- (3) Pesticides and herbicides, which may come from a variety of sources including agriculture, urban storm water runoff, and residential uses.
- (4) Organic chemical contaminants, including synthetic and volatile organic chemicals, which are byproducts of industrial processes and petroleum production, and also from fueling stations, urban storm water runoff, and failing septic systems.

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 may be at risk from infections. Other high risk groups include infants and the elderly. These people should seek advice about local drinking water from their health care providers. The EPA and the Centers for Disease Control and Prevention (CDC) guidelines on effective means to lessen the risk of infection by microbial contaminants are available from the **Safe Drinking Water Hotline at (800)-426-4791**.

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

Sources of Your Drinking Water

The sources of your drinking water are five groundwater wells on the Main Base, as described and shown in the map below:

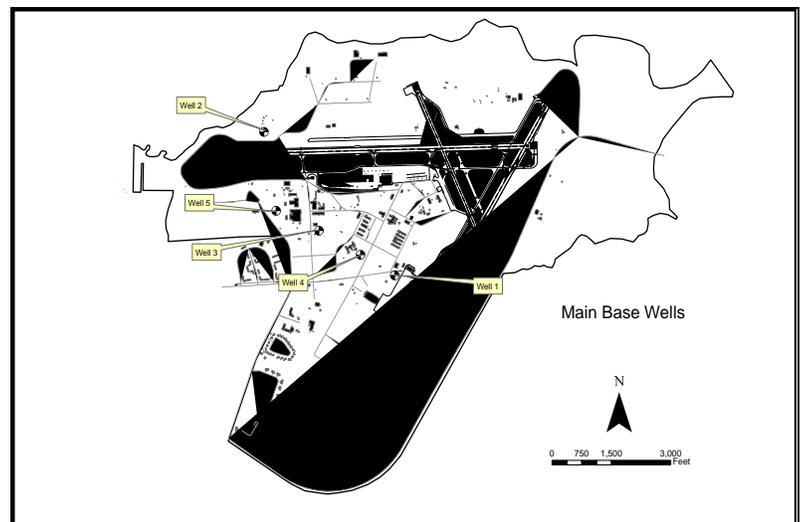
- Well #1** – Between Buildings E134 and N159; this well is 260 feet deep.
- Well #2** – Between Bldg. D12 and runway 10-28; this well is 150' deep.
- Well #3** – Between Bldg. F157 and Storage Bldg.; this well is 253' deep.
- Well #4** – Between Bldg. F160 and Tennis Court; this well is 265' deep.
- Well #5** – Between Bldg. F10 and H-100; this well is 260' deep.

How is our water treated?

Groundwater sources are not required to be chlorinated unless:

- there is a potential source of contamination,
- there is a failure to meet the bacteriological quality standards, or
- the groundwater supply is under the direct influence of surface water.

WFF chooses to treat its groundwater supply by chlorination, although it is not required. Since WFF chooses to treat by chlorination, the VDH recommends that we maintain a residual chlorine level between 0.1-0.5 mg/L throughout the distribution system.



DRINKING WATER MONITORING

Our water is tested to ensure it is safe, and is routinely monitored in accordance with Federal and State regulations.

The table lists only those contaminants that have had some measurable level of detection within the past 5 years. Many other contaminants have been analyzed and were not present, or were below the laboratory equipment detection limits. Contaminants below detection limits are not usually of concern.

State regulators allow WFF to monitor several contaminants less than once per year because the concentrations of these contaminants do not change frequently. Some of the data in the table to the right is more than one year old, but is still considered accurate for these contaminants. The table shows monitoring results from December 2006 through December 2010.

How to Read This Table

AL (ACTION LEVEL) -The concentration of a contaminant that, if exceeded, triggers treatment or other requirements which a water system must use.

DETECTED LEVEL -The concentration observed in our water during that round of testing.

HAA5 (Haloacetic Acid) – The sum of the five of the nine haloacetic acids that are regulated. HAA5 can form in drinking water by the addition of chlorine.

MCL (Maximum Contaminant Level)- The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs(see definition below) as feasible by 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. MCLGs allow for a margin of safety set by EPA.

MRDL (Maximum Residual Disinfectant Level) -The highest level of a disinfectant allowed in the drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

MRDLG (Maximum Residual Disinfectant Level Goal) - 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 use of disinfectants to control microbes.

ND (Non-detect) – Not detected in the sample.

ppb (parts per billion) –Concentration in parts per billion, or micrograms per liter (ug/L); this is equivalent to a single penny in ten million dollars.

ppm (parts per million) –Concentration in parts per million, or milligrams per liter (mg/L); this is equivalent to a single penny in ten thousand dollars.

SOURCE OF SUBSTANCE- Explains the typical natural or manmade origins of the contaminant.

TTHM (Total Trihalomethanes) – The sum of the four constituent compounds that form in drinking water by reactions of chlorine and organic material.

Water Quality Data Summary

| Contaminants Regulated (Units) | Goal (MCLG) | Max. Allowed (MCL) | Detected Level | Range of Levels Tested | Violation | Date of Sample | Sources of Substance |
|--|-------------|--------------------|----------------|------------------------|-----------|----------------|--|
| Chlorine (ppm) | 4 MRDL | 4 MRDLG | 0.45 | ND-1.66 | No | CY 2010 | Water additive to control microbes |
| TTHM ¹ (ppb) Running Annual Average | 0 | 80 | 83 | 57-107 | Yes | 08/19/10 | By-product of drinking water chlorination |
| HAA5 ² (ppb) Running Annual Average | 0 | 60 | 29 | 5-30 | No | 2010 | By-product of drinking water chlorination |
| Copper ³ (ppm) | 1.3 | AL=1.3 | 0.128 | ND-.182 | No | 12/21/10 | Corrosion of plumbing systems; Erosion of natural deposits; Leaching from wood preservatives |
| Lead, Pb ⁴ (ppb) | 0 | AL=15 | <2 (ND) | ND-5.84 | No | 12/21/10 | Corrosion of plumbing systems; Erosion of natural deposits |

TABLE FOOTNOTES

¹The Detected Level represents a running quarterly average. 2 samples were above the primary MCL.

²The Detected Level represents a running quarterly average. Samples collected CY 2010 were 17 ppb.

³The Detected Level represents the 90th percentile value. None of the 10 samples tested for copper exceeded the current Action Level of 1.3 ppm.

⁴The Detected Level represents the 90th percentile value. None of the 10 samples tested for lead exceeded the current Action Level of 15 ppb.

Note: Please note that the past two sets of samples did not exceed the lead or copper Action Levels. WFF issued a notice to inform all consumers that some taps have elevated lead levels and placed filters on drinking water fountains and kitchen faucets to remove metals, including lead.

Since August 2005, the WFF waterworks has been adding small amounts of zinc orthophosphate to the water distribution system. Zinc orthophosphate works by forming a protective lining inside pipes and plumbing fixtures to prevent metals such as lead and copper from leaching into drinking water. It is VDH approved, recognized as safe by the Food and Drug Administration, and is certified for use in drinking water treatment by NSF International. Additional information regarding lead and copper in WFF's drinking water has been distributed to all employees and the documents are also posted on bulletin boards in all WFF buildings.

To receive additional copies contact:

Owen Hooks of the WFF Environmental Office at (757) 824-1941
or Richard.O.Hooks@nasa.gov

Other drinking water constituents of interest are as follows:

The Virginia Department of Health conducted a Source Water Assessment of the NASA Wallops Flight Facility Waterworks in 2002. All five wells were determined to be of low susceptibility to contamination using the criteria developed by the VDH in its approved Source Water Assessment Program. The assessment report consists of maps showing the Source Water Assessment area, an inventory of Land Use Activity Sites in Zone 1, a Susceptibility Explanation Chart, and Definitions of Key Terms. The report is available by contacting **Owen Hooks of the Environmental Office at (757) 824-1941 or Richard.O.Hooks@nasa.gov**

Other drinking water constituents of interest are as follows:

Nitrate/Nitrite monitoring requirements were not met for NASA Wallops Flight Center in CY 2010, because the samples were not recorded. A follow-up sample was collected in May 2011, and the test result for Nitrate/Nitrite was below laboratory detection limits. All previous test results from CY 2003 - CY 2009 were also below detection limits.

The 2009 drinking water test for iron indicated a level of 0.139 mg/L. This is below the SMCL for iron, which is 0.3 mg/L. Note: Iron may be a nuisance constituent in water supplies for domestic or industrial use even at low levels. Iron can impart brownish discolorations to laundered goods. The taste it imparts to water may be described as bitter or astringent, and may adversely affect the taste of other beverages.

Human diets contain 7 to 35 milligrams of iron per day, and average 16 mg per day. The allowable amount of iron in drinking water constitutes only a small fraction of the amount normally consumed and does not have any toxicological significance.

The 2009 drinking water test for zinc indicated a level of 0.719 mg/L. This is below the SMCL for zinc, which is 5 mg/L. Zinc is an essential and beneficial element in human metabolism, and levels in water below the SMCL do not cause serious health effects.

Above the SMCL, it may produce taste in water that is described as bitter or astringent. Zinc is naturally occurring in the environment; however, the level of 0.719 mg/L reported for the subject system is likely due to the addition of the corrosion inhibitor zinc orthophosphate.

Additional Health Information:

Certain contaminants (such as Arsenic, Cryptosporidium, Lead, Nitrate, Radon, TTHMs), if present in your drinking water, may be of special concern to consumers.

Lead (Pb):

If elevated levels of lead are present, they 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. NASA Wallops Flight Facility is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. Water standing in pipes for several hours presents an increased risk of lead leaching.

You can minimize this risk by flushing your tap until it becomes cold and reaches a steady temperature before using the water for drinking or cooking. If you are concerned about lead in your water, you should 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>.

Total Trihalomethanes (TTHMs):

TTHMs are by-products of drinking water chlorination. WFF has exceeded the primary MCL; corrective actions are in place. TTHMs dissipate rapidly in open containers exposed to air. However, it should be noted that some people who drink water containing elevated TTHMs over many years have a slightly increased risk of experiencing problems with their liver, kidneys, or central nervous system, and may have an increased risk of cancer.

Note: WFF personnel have equipped drinking water sources, including fountains and kitchen faucets, with filters that aid in removing lead and THMMs. Please make use of potable water sources equipped with filters for drinking, cooking, etc. If you need a filter changed, please contact the WICC HELP desk at extension 4357.



Water Conservation –
Simple steps to save water and lower your bill:

- Report leaks in faucets, toilets, and hoses by calling the WICC Help Desk @ extension 4357.
- Run your clothes washer and dishwasher only when full.
- Take shorter showers.
- Turn water off while you brush your teeth, shave, or shampoo.

Additional information on how you can help conserve water and protect your water supply can be found at the EPA's website
<http://www.epa.gov/owm/water-efficiency/index.htm>.

This Drinking Water Quality Report was prepared by:

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