The City of Norfolk Department of Utilities is committed to providing residents and businesses throughout the City with top quality water service. Utilities' employees work 24 hours a day, 365 days a year to ensure that you always have access to safe Norfolk drinking water. The Water Quality Report is distributed annually to inform our customers that we are meeting all water quality guidelines set forth by the Environmental Protection Agency.

Once again in 2010, Norfolk tap water met all federal requirements.

City of Norfolk
Department of Utilities

400 Granby Street
Norfolk, VA 23510

Mailing Address: P.O. Box 1080
Norfolk, VA 23501

Customer Service: 757-664-6700
Water & Sewer Emergencies: 757-823-1000
Water Quality Lab: 757-441-5678

www.Norfolk.gov/Utilities

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City of Norfolk 2011 Water Quality Report

Based on 2010 Testing Data

NORFOLK DEPARTMENT OF UTILITIES

Top Quality Drinking Water
Top Quality Service

757-664-6700
www.Norfolk.gov/Utilities

Drinking Water Week 2011

Water

Celebrate the Essential
May 1-7, 2011

The time has come for all of us to simplify our lives, and concentrate on what's truly important.

And really, what's more essential to our lives and our health than water? Water is essential for life. And it's used by everyone -- for everything we eat, drink or use. Water refreshes us and keeps us healthy.

So celebrate what's essential.
Celebrate water.

During Drinking Water Week we remind you of what only tap water delivers: public health protection, fire suppression, support for the economy and quality of life!

Norfolk Drinking Water
Tap Into Quality

Quality of Life

Any measure of a successful society (economic diversity, productivity, public safety) is in some way related to the access to safe drinking water. In Norfolk, safe water is always accessible to drink, wash our clothes, water our lawns and for myriad other purposes. In all our activities, we are reminded of the extraordinary value of water.

Support for the Economy

Businesses or housing developments succeed with a safe and sustainable water supply. Tap water is critical to businesses' day-to-day operations and is often a primary ingredient in the services and products they create. Norfolk's Department of Utilities continues to improve the water infrastructure to accommodate the City's growing business and residential population. Water capital improvement projects are continuing across the City.

Public Health Protection

Norfolk began treating drinking water long before it was commonplace and decades before it was required by law. The central water system was created in 1871 and the sewer system in 1889. By the 1930's Norfolk experienced a significant drop in death rates caused by waterborne illnesses. Water distribution and wastewater collection are two of the City's oldest public services and contribute significantly to the protection of public health.

Public Safety

A well maintained water system is critical in protecting our communities from the ever present threat of fire. The ability to suppress fires also influences new home construction, business location decisions and insurance rates.

The City of Norfolk receives its raw (untreated) water from eight reservoirs, two rivers and four deep wells. The map at right shows the location of each of your water sources. From these sources, raw water is pumped to one of the Department of Utilities' two water treatment plants, where it is filtered and disinfected. Once tested for top quality, Norfolk drinking water is pumped on demand to your tap.

Definitions

- **MCL (maximum contaminant level)**, the highest level allowed by regulation;
- **MCLG (maximum contaminant level goal)**, the ideal goal;
- **MRDL (maximum residual disinfectant level)**, the highest level of a disinfectant allowed in drinking water;
- **MRDLG (maximum residual disinfectant level goal)**, the level of a drinking water disinfectant below which there is no known or expected risk to health;
- **TT (treatment technique)**, a required process intended to reduce the level of a substance in drinking water;
- **AL (action level)**, the amount required to trigger treatment or other action;
- **LIKELY SOURCE,** where it could come from;
- **REGULATED SUBSTANCES** are regulated by the EPA and they cannot be above the MCL;
- **TURBIDITY** is a measure of the cloudiness of water, which is not necessarily harmful, but can interfere with the disinfection of drinking water;
- **MICROBIOLOGICAL CONTAMINANTS** are used as an indicator that other, potentially harmful bacteria may be present;
- **UNREGULATED MONITORED SUBSTANCES** are not regulated by the EPA, but they must be monitored so information about their presence in drinking water can be used to develop limits.

Table Key

ppm – One part per million (equivalent to 1 minute in 2 years).
ppb – One part per billion (equivalent to 1 minute in 2,000 years).
pCi/L– Picocuries per liter (measure of radioactivity).
NTU – Nephelometric Turbidity Unit (measure of very small particulate matter in drinking water).
> – Greater than.
ND – Not detected in the water.

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. It can also pick up substances resulting from the presence of animals or from human activity. Contaminants that may be present in source (raw) 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 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.

In 2001 the Hampton Roads Planning District Commission conducted a study on all the raw water sources in the area, including Norfolk's, to determine the susceptibility of reservoirs, rivers, and wells to contamination. Norfolk's susceptibility has been rated high. Norfolk's water treatment process ensures you receive high quality treated tap water that meets all Federal Safe Drinking Water Act requirements. For a copy of this study contact Norfolk's Water Quality Lab at 757-441-5678.

In order 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. FDA regulations establish limitations for contaminants in bottled water which must provide the same protection for public health. Drinking water, including bottled water, may reasonably be expected to contain at least small (trace) amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. **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, 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:**

Environmental Protection Agency's
Safe Drinking Water Hotline
800-426-4791

For questions regarding this report contact Norfolk's Water Quality Lab at 757-441-5678. For more information about decisions affecting your drinking water quality, you may attend Norfolk City Council meetings. For times and agendas, call the City Clerk's office at 757-664-4253.

Regulated Substances

Substance	Likely Source	Norfolk's Measured Range	Norfolk's Average Level	Norfolk's Highest Level	MCL	MCLG	Unit	Meets EPA Standards
Barium	Erosion of natural deposits	27-40	33	40	2000	2000	ppb	✓
Chloramine	Drinking water disinfectant	0.4-5.2	3.3	5.2	4[1A]	4[1B]	ppm	✓
Fluoride	Added to prevent tooth decay	0.1-1.2	0.8	1.0[2]	4	4	ppm	✓
Gross Beta Activity	Erosion of natural deposits	3.3-3.8	3.6	3.8	50[3]	0	pCi/L	✓
Haloacetic Acid (HAA5)	Disinfection by-product	19-62	41	42[4]	60	n/a	ppb	✓
Nitrate as Nitrogen	Erosion of natural deposits, runoff	0.12-0.45	0.26	0.45	10	10	ppm	✓
Radium 226/228	Erosion of natural deposits	ND-0.8	ND	0.8	5	0	pCi/L	✓
Total Organic Carbon	Occurs naturally in environment	1.9-3.4	2.5	3.1[2]	TT	n/a	ppm	✓
Trihalomethanes (TTHM)	Drinking water disinfection by-product	20-90	45	48[4]	80	n/a	ppb	✓

[1A] MRDL [1B] MRDLG [2] Highest monthly average for calendar year [3] EPA considers 50 pCi/L to be the level of concern for Beta particles.
[4] Highest running average of quarterly compliance samples for the calendar year

Turbidity

Substance	Likely Source	Norfolk's lowest Monthly % of Samples Meeting Limit	Norfolk's Highest Level (NTUs)	MCL	MCLG	Unit	Meets EPA Standards
Turbidity	Soil runoff	100%	0.29	<95%	n/a	NTU	✓

Microbial Contaminants

Substance	Likely Source	Norfolk Samples Indicating Bacteria Present	Norfolk's Highest Monthly % of Positive Samples	Norfolk's Months of Presence	Nat'l MCL	Nat'l MCLG	Meets EPA Standards
Total Coliform Bacteria	Natural in environment	7	1.3%	May, June, July, Aug, Oct	5% of samples per month positive for total coliform	0	✓

Lead and Copper in Customers' Homes (data from 2008 sampling)

*Norfolk has extremely low lead levels in its drinking water system. Because of this, the EPA has placed Norfolk on a reduced monitoring schedule. In 2008, no lead was detected at the monitoring level.**

Substance	Likely Source	Norfolk's Results	Norfolk Homes Exceeding Action Level	Action Level	Unit	MCLG	Meets EPA Standards
Copper	Household plumbing erosion	0.2*	0	1.3	ppm	1.3	✓

*Lead and copper compliance is measured at the 90th percentile of all samples taken.

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 Norfolk Department of Utilities 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 (800-426-4791) or at http://www/epa.gov/safewater/lead.

Unregulated Monitored Substances

Substance	Likely Source	Norfolk's Range	Norfolk's Average Level	Norfolk's Highest Level	MCL	Unit
Aluminum	Erosion of natural deposits; also from addition of treatment chemicals at the water treatment plant	0.01-0.08	0.05	0.08	n/a	ppm
Diethylphthalate	Personal care products and plastics	ND-2.1	ND	2.1	n/a	ppm
Manganese	Natural in environment	ND-0.02	ND	0.02	n/a	ppm
Nickel	Corrosion of plumbing materials	ND-2	ND	2	n/a	ppb
Sodium	Natural in environment; also from addition of treatment chemicals at the water treatment plant	9-24	15	24	n/a*	ppm
Sulfate	Natural in environment; also from use of chemicals at the water treatment plant	23-31	27	31	n/a	ppm

* For physician-prescribed "no salt diets," a limit of 20 ppm is suggested

Additional Information

The substances listed below are not regulated by the EPA; however, the Water Quality Lab receives calls about them and provides this information as a service to our customers.

Substance	Norfolk's Range	Norfolk's Average Level	EPA's Suggested Limit	Unit
Alkalinity	13-39	26	n/a	ppm
Chloride	10-47	18	250	ppm
Hardness	31-63	46	n/a	ppm
pH (acidity)	6.7-9.5	7.7	6.5-8.5	pH units
Silica	6-9	6	n/a	ppm
Total Dissolved Solids	100-133	114	500	ppm