

HENRY COUNTY PUBLIC SERVICE AUTHORITY

Annual Drinking Water Quality Report for 2010



INTRODUCTION

This Annual Drinking Water Quality Report is designed to inform you about your drinking water quality. Our goal is to provide you with a safe and dependable supply of drinking water, and we want you to understand the efforts we make to protect your water supply. The quality of your drinking water must meet state and federal requirements administered by the Virginia Department of Health (VDH).

Si usted no habla ni lee ingles, pida por favor que alguien traduzca este documento para usted.

If you have questions about this report or want additional information about any aspect of your drinking water, please contact the Public Service Authority at (276) 634-2500. The mailing address is P.O. Box 69, Collinsville, VA 24078. The Internet site is www.co.henry.va.us. Henry County Public Service Authority's Board meets at 6:00pm, on the 3rd Monday of each month.

GENERAL INFORMATION

The source of drinking water (both tap water and bottled water) includes rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the land or through the ground, it dissolves naturally occurring minerals and in some cases radioactive material. It also can pick up substances resulting from the presence of animals or human activity. Contaminants that may be present in source water are: (1) Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural live stock operations, and wildlife. (2) 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. (3) Pesticides and herbicides, which may come from a variety of sources such as 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 can, also come from gas stations, urban storm-water runoff, and septic systems. (5) 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, EPA prescribes regulations, which limit the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration regulations establish limits for contaminants in bottled water that must provide the same protection for public health. 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. Immune-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 microbiological contaminants are available. More information can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline (800-426-4791).

TREATMENT

Treatment of surface (raw) water consists of chemical addition, fluoridation, coagulation, flocculation, sedimentation, filtration, and chlorination. These processes work together to remove the physical, chemical, and biological contaminants to make the water safe for drinking.

SERVICE AREAS

The Upper Smith River Water Filtration Plant receives its water supply from the Smith River. The facility services the following areas of Henry, Patrick and Pittsylvania Counties: Fairy Stone, Stones Dairy, 57 West, Bassett, Stanleystown, Fieldale, Carver, Collinsville, 220 South, Ridgeway, 58 West, Mount Olivet, Axton, and 58East.

If you live in the Sandy Level area of Henry County your water is provided by the City of Eden, NC water plant and supplied by the Dan River. If you live in this area please read the Sandy Level report.

Source Water Assessment Program (SWAP) Upper Smith River WFP

The Virginia Department of Health completed a source water assessment for the Upper Smith River source water during 2001/2002. Also, the Virginia Rural Water Association performed a separate source water assessment that was approved by the Virginia Department of Health in 2006. The source water for the system is determined to be of high susceptibility to contamination using the criteria developed by the state in its approved Source Water Assessment Program. The assessment report consists of maps showing the source water assessment area, an inventory of known land use activities of concern, and documentation of any known contamination (none in this case) within the last 5 years. The report is available by contacting the Upper Smith River Water Filtration Plant, 590 Philpott Drive Bassett, Virginia 24055; Phone 276 629-3227, during business hours.

Sandy Level Water System-Source Water Assessment Program (SWAP) and Its Availability for the City of Eden, NC

The State of North Carolina Department of Environment and Natural Resources (DENR), Public Water Supply Section has conducted Source Water Assessments on all water supplies in the State. The Source Water Assessment evaluates the watershed supplying your water for Potential Contamination Sites (PCS). North Carolina Public Water Supply Section has assigned each drinking water source a relative "Susceptibility Rating" characterized as "Higher, Moderate or Lower." A susceptibility rating of "Higher" does not imply poor drinking water quality. Susceptibility is an indication of a water supply's potential to become contaminated by PCSs within the assessment area. The values assigned by our Source Water Assessment were "higher" for Inherent Vulnerability, "moderate" for Contaminant Rating and "higher" for Susceptibility Rating. The contaminant rating for your water source was determined based on the number and location of PCSs within the delineated area. The inherent vulnerability rating of your water source refers to the geologic characteristics or existing conditions of the surface water source and the delineated area (watershed). Susceptibility rating for your surface water is determined by combining the contaminant rating and the inherent vulnerability rating. Details of how North Carolina prepared source water assessments are available on the State DENR website at (www.deh.enr.state.nc.us/pws/swap). To obtain a printed copy of this report, please mail a written request to: Source Water Assessment Program – Report Request, 1634 Mail Service Center, Raleigh NC 27699 – 1634, or email request to swap@ncmail.net. Please indicate PWSID 02-79-010 and provide your name, mailing address and phone number. If any questions about SWAP report please contact the Source Water Assessment staff by phone at 919 719 2633.

DEFINITIONS

Contaminants in your drinking water are routinely monitored according to Federal and State regulations. The tables on the following pages show the results of our monitoring for the past calendar year. In the table and elsewhere in this report you will find many terms and abbreviations you might not be familiar with. The following definitions are provided to help you better understand these terms:

- **Action Level - (AL)** the concentration of a contaminant, which, if exceeded, triggers treatment or other requirements which a water system must follow.
- **Chlorination:** The application of chlorine or chlorine compounds to water, generally for the purpose of disinfection, but frequently for chemical oxidation and odor control.
- **Coagulation:** The conversion of very small particles into small visible particles by chemical addition.
- **Filtration:** The process of contacting the water with filter media for the removal of very fine particles.
- **Flocculation:** In water treatment it's the gentle mixing of the water and chemicals by either mechanical or hydraulic means to help with the coagulation process.
- **Fluoridation:** The addition of fluoride to water to optimize reduction of tooth decay in children.

- **Maximum Contaminant Level, or 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, or 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 Disinfectant Residual Level (MDRL)** - 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 Disinfectant Residual Level Goal (MDRLG)** 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 contaminants.
- **Nephelometric Turbidity Unit (NTU)** - nephelometric turbidity unit is a measure of the clarity, or cloudiness, of water. Turbidity in excess of 5 NTU is just noticeable to the average person. Turbidity is monitored because it is a good indicator of the effectiveness of our filtration system.
- **Non-detects (ND)** - lab analysis indicates that the contaminant is not present
- **NR**- Not Required
- **Parts per million (ppm) or Milligrams per liter (mg/l)** - one part per million corresponds to one minute in two years or a single penny in \$10,000.
- **Parts per billion (ppb) or Micrograms per liter** - one part per billion corresponds to one minute in 2,000 years, or a single penny in \$10,000,000.
- **Parts per trillion (ppt) or Nanograms per liter (nanograms/l)** - one part per trillion corresponds to one minute in 2,000,000 years, or a single penny in \$10,000,000,000.
- **Picocuries per liter (pCi/L)** - picocuries per liter is a measure of the radioactivity in water.
- **Sedimentation, Settling:** The process of removing suspended matter carried by water, by gravity.
- **Treatment Technique (TT)** - a required process intended to reduce the level of a contaminant in drinking water.

LEAD IN DRINKING WATER

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. Henry County Public Service Authority is responsible for providing high quality drinking water, but cannot control the variety of material 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 or until it becomes cold or reaches a steady temperature 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 at <http://www.epa.gov/safewater/lead>.

DISINFECTION BYPRODUCTS IN DRINKING WATER

Disinfection is an absolutely essential component in the treatment of drinking water, preventing the occurrence and the spread of many serious and potentially deadly water-borne diseases. Chlorination is a time proven method for disinfection, but some minute amounts of byproducts do result in the form of trihalomethanes (THMs) as chlorine combines with naturally occurring matter (such as leaf debris) in the raw water. Some people who drink water containing THMs in excess of the MCL over many years could experience problems with their liver, kidneys or central nervous systems, and may have an increased risk of getting cancer. Additional information is available from the Safe Drinking Water Hotline (800-426-4791)

CRYPTOSPORIDIUM AND GIARDIA

Upper Smith River Water Supply:

Cryptosporidium and Giardia are microscopic organisms that may enter surface water from runoff containing animal waste. If ingested, they may cause diarrhea, fever and other gastrointestinal symptoms. The Upper Smith River Water Filtration Plant has participated in the EPA's cryptosporidium LT2 program, which

required sampling of the source water prior to any treatment. Monitoring per the LT2 Rule was completed in March 2010 and we are happy to report there were no Cryptosporidium detected. The January 2009 sampling, one fluorescing object resembling a Giardia cyst was observed in the raw source water sample. For a number of years we have been required to meet minimum treatment technique requirements related to turbidity removal and disinfection to ensure adequate Giardia removal and / or inactivation is achieved.

Sandy Level Supply:

The City of Eden monitored their source water for Cryptosporidium during a 20-month period and found 1 oocysts/liter in July 2009 and 3 oocysts/liter December 2009 and 1 oocysts/liter February 2010. Zero oocysts/liter were found the other monitoring months. Cryptosporidium is a microbial parasite, which is found in surface water throughout the U.S. Although Cryptosporidium can be removed by filtration, the most commonly used filtration methods cannot guarantee 100 percent removal. The City of Eden's monitoring of the source water and / or finished water indicates the presence of these organisms. Current test methods do not enable the determination if the organisms are dead or if they are capable of causing disease. Symptoms of infection include nausea, diarrhea, and abdominal cramps. Most healthy individuals are able to overcome the disease within a few weeks. However, immune-compromised people have more difficulty and are at greater risk of developing severe, life-threatening illness. Immune-compromised individuals are encouraged to consult their doctor regarding appropriate precautions to take to prevent infection. Cryptosporidium must be ingested for it to cause disease, and it may be spread through means other than drinking water.

VIOLATION INFORMATION:

Upper Smith River Water Supply: We are happy to report this water supply did not have any violations to report during 2010;

Sandy Level Water Supply:

The Sandy Level Water Supply was issued a monitoring violation during 2010. The Authority was cited by the Virginia Department of Health on April 27, 2010 for failure to analyze the required samples for disinfection byproducts (Total Trihalomethanes and Total Halo- acetic acids) during the January – March 2010 quarter. Samples are required to be collected each quarter from the distribution system to confirm water quality meets the required standards for these disinfection byproducts. In actuality, samples were collected as required and submitted to the laboratory used for routine testing. However, these samples were subcontracted to a different laboratory, which was not certified for the required testing and therefore the results were rejected for compliance purposes. Because the data was not accepted, the health effect was not known during this time but we note the reported values for the quarter were typical of those in the past.

The Sandy Level Water Supply also incurred violations for exceeding the Primary Maximum Contaminant Level for Total Trihalomethanes (TTHM) during the first through the fourth quarters (January – December) of 2010. Compliance with the PMCLs is based on a running annual average (4 quarters) of the quarterly samples collected, and the TTHM levels exceeded the PMCL during each quarter of 2010. As referenced above, TTHM compounds are formed when trace amounts of naturally occurring organic compounds in the raw water source combine with chlorine that is used to disinfect the treated water. This water supply is served directly from the City of Eden water supply. Because of the nature of formation of these compounds in the presence of chlorine, increased detention time in the system allows additional formation beyond what is formed in the City's water supply and thus can account for higher levels detected. All locations do not have the same levels of TTHMs. Higher levels are expected in the areas with highest residence time (generally the furthest points in the system) and during the warmer months of the year. Some people who drink water containing TTHMs in excess of the PMCL over many years could experience problems with their liver, kidneys or central nervous system and may have increased risk of getting cancer. This water system will continue to be monitored for TTHMs. The January – March 2011 monitoring will allow the compliance determination to be based on the normal four-quarter running average and we anticipate will be within the Primary Maximum Contaminant Level (PMCL) in the near future. The Authority intends to maintain compliance with all monitoring and drinking water standards and we anticipate being back in compliance in the near future.

Although not a violation of this water supply, the Authority wanted to pass on that during 2010, as supplier of this water supply, the City of Eden received a monitoring violation during 2010 for an event that happened on May 29, 2010. During a lightning storm the City experienced a power failure that disabled the continuous turbidity monitoring devices at the water treatment plant. The State of North Carolina requires the City to collect grab samples every 4 hours if the continuous monitoring equipment fails. The City failed to collect one 4 hour period which resulted in a monitoring violation. The equipment was reset and returned to normal operating condition. When the equipment returned to order the turbidity was in compliance. The City indicates the operators have been trained on proper procedure to assure this does not happen again. Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, and diarrhea and associated headaches.

TABLES

We constantly monitor for various contaminants in the water supply to meet all regulatory requirements. The tables list only those contaminants that had some level of detection. Many other contaminants have been analyzed but were not present or were below the detection limits of the lab equipment. Concentrations of contaminants that do not change frequently are monitored less often than once per year.

The U.S. Environmental Protection Agency sets MCLs at very stringent levels. In developing the standards EPA assumes that the average adult drinks 2 liters of water each day throughout a 70-year life span. EPA generally sets MCLs 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.

TABLES NOTES

In the tables that follow, these items may be noted:

- a** MCL: (Systems that collect 40 or more samples per month) 5% of monthly samples are positive; (systems that collect fewer than 40 samples per month) 1 positive monthly sample.
- b** UR – Unregulated
- c** AL – Action Level: Copper is 1.3 mg/L; Lead is 15ppb
- d** 95% of filter effluent samples <.3ntu and 100% maximum of 1 NTU.
- e** Primary Contaminant Levels (PMCL) for TTHMs & HAA₅s are base on a running average.

Results for the Upper Smith River WFP for 2010

CONTAMINANTS	MCLG	MCL	LEVEL FOUND	RANGE	VIOLATION	DATE OF SAMPLE	MAJOR SOURCE OF CONTAMINATION
Microbiological							
Total Coliform (Distribution)	0	1 #	1	NA	None	8/10	Naturally occurring in the environment.
Turbidity (NTU) (Filtered)	NA	TT #	100% sample <0.3ntu Max-0.09ntu	0.02 to 0.09 (max)	None	Every 2 hours	Soil runoff
Total Organic Carbon (TOC) - removal ratio	NA	TT-based on the % of TOC removed during the treatment process met when removal ratio is ≥ 1.0	1.0 minimum removal ratio	All quarterly ratios 1.0	None	Quarterly	Naturally present in the environment
Chlorine (ppm) (Distribution)	MRDLG=4	MRDL=4	1.45 highest quarterly avg.	0.00 to 1.97	None	Monthly	Water additive used to control microbes.
Inorganic Contaminants							
Nitrate (ppm)	10	10	0.20	NA	None	9/10	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Fluoride (ppm)	4	4	0.84 avg.	0.38 to 1.0	None	Daily	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
Barium (ppm)	2	2	0.01	NA	None	9/10	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits.
Metals Monitored @ Tap							
Copper (ppm) (Distribution)	1.3	1.3 #	0.047 @ 90 th %	<0.020 – 0.096 All 60 samples below action level	None	10/09 – 12/09	Corrosion of household pumping. Erosion of natural deposits; leaching from wood preservatives
Lead (ppb) (Distribution)	15	15 #	<2 @ 90 th %	<2 -9 All 60 samples below action level	None	10/09 – 12/09	Corrosion of household pumping. Erosion of natural deposits
Organic							
Haloacetic Acid (HAA5) (ppb) (Distribution)	60	60	44 – highest 4 quarter avg.	27 to 82	None	Every 60 -90 days	By-product of drinking water disinfection
Total Trihalomethanes (TTHMs) (ppb) (Distribution)	NA	80	44 – highest 4 quarter avg.	20 to 82	None	Every 60-90 days	By-product of drinking water chlorination
Radiological Monitoring							
Gross Alpha (pCi/L)	0	15	1.6	NA	None	3/03	Erosion of natural deposits
Gross Beta (pCi/L)	0	4 mrem/yr	2.6	NA	None	3/03	Decay of natural & man-made deposits
Combined Radium (pCi/L)	0	5	0.7	NA	None	3/03	Erosion of natural deposits

Results for 2010 - Sandy Level, Log Town

CONTAMINANTS	MCLG	MCL	LEVEL FOUND	RANGE	VIOLATION	DATE OF SAMPLE	MAJOR SOURCE OF CONTAMINATION
Microbiological							
Total Coliform (Distribution)	0	1 ^a	0	NA	None	Monthly	Naturally occurring in the environment.
Turbidity (NTU) (Filtered)	NA	TT ^f	100% sample <0.3ntu	Max 0.1	None	2010	Soil runoff
Organic							
Chlorine (Distribution) (ppm)	MRDLG=4	MRDL=4	0.93- highest quarterly avg.	0.20 to 1.00	None	Monthly	Water additive used to control microbes
Total Organic Carbons	NA	TT- Based on % of removal during treatment process; Removal requirement are met when ratio ≥ 1.0	1.08	0.41 to 1.22	None	2010	Naturally present in the environment
Total-Trihalomethanes (TTHMs) (ppb) (Distribution)	80	80	98 highest 4 quarterly avg.	67 to 130	Yes	Quarterly	By-product of drinking water chlorination
Haloacetic Acids (HAAs) (ppb) (Distribution)	60	60	19 highest 4quarterly avg.	8 to 26	None	Quarterly	By-product of drinking water chlorination
Inorganic							
Fluoride (ppm)	4	4 ^g	0.90	0.03 to 1.33	None	2010	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
Metals – Regulated @ Customers Taps							
Copper, (ppm)	1.3	1.3 ^ε	<0.077 @ 90 th percentile	<0.05 -0.15 All 5 samples less than action level	None	9/09	Corrosion of household plumbing system; Erosion of natural deposits;
Lead, (ppb)	15	15 ^ε	<3.5 @ 90 th percentile	<3 to 7 All 5 samples less than action level	None	9/09	Corrosion of household plumbing system; Erosion of natural deposits;