AWQR SOURCE WATER ASSESSMENT SUMMARY

The NYS DOH has completed a source water assessment for this system, based on available information. Possible and actual threats to this drinking water source were evaluated. The state source water assessment includes a susceptibility rating based on the risk posed by each potential source of contamination and how easily contaminants can move through the subsurface to the wells, called the well sensitivity. The susceptibility rating is an estimate of the potential for contamination of the source water, it does not mean that the water delivered to consumers is, or will become contaminated. See section "Are there contaminants in our drinking water?" for a list of the contaminants that have been detected. While nitrate and other inorganic contaminants were detected in our water, it should be noted that all drinking water, including bottled drinking water, may be reasonably expected to contain at least small amounts of some contaminants from natural sources. The presence of contaminants does not necessarily indicate that the water poses a health risk.

As mentioned before, our water is derived from six active drilled wells and one emergency well (not evaluated in this assessment). The source water assessment has rated wells 1-2A, 1-3 and 4-2 as highly sensitive to both chemical and microbial contaminants. The wells rate a high sensitivity because of historic detections of chemical contaminants and because the wells are located in a very productive, unconfined aquifer where the subsurface soils allow large volumes of water to move through the aquifer. Wells 4-3 and 4-4 also rate a high sensitivity for both microbial and chemical contamination because they are located in a very productive aquifer. Well 5-1 is in an area where the aquifer is somewhat protected with a low permeability layer above the aquifer the well draws from. The following table lists the sensitivities and rationales for each well in the Vestal water system.

well name	chemical sensitivity	microbial sensitivity
1-2A	High – productive aquifer & known chemical presence	High – productive aquifer
1-3	High – productive aquifer & known chemical presence	High – productive aquifer
4-2	High – productive aquifer & known chemical presence	High – productive aquifer
4-3	High – productive aquifer	High – productive aquifer
4-4	High – productive aquifer	High – productive aquifer
5-1	Medium – confined aquifer	Medium – confined aquifer

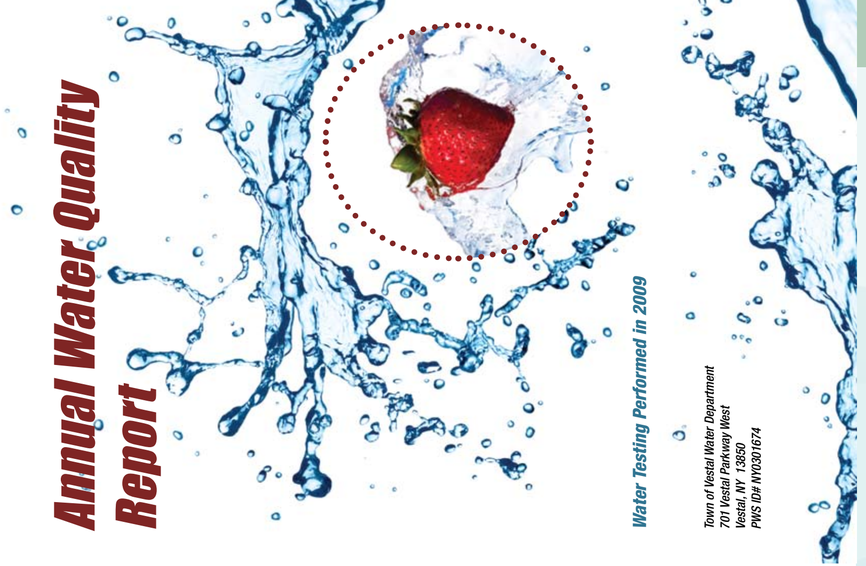
Potential contaminant sources are then evaluated and given a contaminant prevalence rating. The source water assessment has rated the Vestal water system wells as having a low to medium-high susceptibility to microbials, such as enteric bacteria and enteric viruses, and a low to very high susceptibility to various chemical contaminants as noted in the tables below. While significant sources of some types of contamination may not have been identified in the assessment area, wells may have been given an elevated susceptibility rating for other chemicals because of high well sensitivities.

While the source water assessment rates our wells as being low to moderately susceptible to microbials, please note that our water is disinfected to ensure that that the finished water delivered into your home meets New York State's drinking water standards for microbial contamination.

The Town of Vestal currently has an active wellhead and watershed protection plan in place to ensure drinking water safety and the source water assessment is another tool that can help direct further refinements to the plan. County and state health departments will also use this information to direct future source water protection activities. These may include water quality monitoring, resource management, planning, and education programs.

SUSCEPTIBILITY TABLE

contaminant	well 1-2A	well 1-3	well 4-2	well 4-3	well 4-4	well 5-1
Cations/Anions (Salts)	High	High	High	Medium-High	Medium-High	Medium
Enteric Bacteria	Medium-High	Medium-High	Medium-High	Medium-High	Medium-High	Low
Enteric Viruses	Medium-High	Medium-High	Medium-High	Medium-High	Medium-High	Low
Halogenated Solvents	Very High	Very High	Very High	Medium-High	Medium-High	Medium
Herbicides/ Pesticides	Medium-High	Medium-High	Medium-High	Medium-High	Medium-High	Low
Metals	High	High	High	Medium-High	Medium-High	Low
Nitrate	Medium-High	Medium-High	Medium-High	Medium-High	Medium-High	Low
Other Industrial Organics	High	High	High	Medium-High	Medium-High	Medium
Petroleum Products	Very High	Very High	Very High	High	High	Low
Protozoa	Medium-High	Medium-High	Medium-High	Medium-High	Medium-High	Low



Annual Water Quality Report

Water Testing Performed in 2009

Town of Vestal Water Department
701 Vestal Parkway West
Vestal, NY 13850
PWS ID# NY0301674

Town of Vestal Water Department
701 Vestal Parkway West
Vestal, NY 13850

THE TOWN OF VESTAL

CONTINUING OUR COMMITMENT

Once again we proudly present our annual water quality report. This edition covers all finished water testing completed from January through December 2009. We are pleased to tell you that our compliance with all state and federal drinking water laws remains exemplary. As in the past, we are committed to delivering the best quality drinking water. To that end, we remain vigilant in meeting the challenges of source water protection, water conservation, and community education while continuing to serve the needs of all of our water users.

WORKING HARD FOR YOU

Under the Safe Drinking Water Act (SDWA), the U.S. Environmental Protection Agency (USEPA) is responsible for setting national limits for hundreds of substances in drinking water and also specifies various treatments that water systems must use to remove these substances. Each system continually monitors for these substances and reports to the USEPA if they were detected in the drinking water. USEPA uses these data to ensure that consumers are receiving clean water.

This publication conforms to the regulation under SDWA requiring water utilities to provide detailed water quality information to each of their customers annually. We are committed to providing you with this information about your water supply because customers who are well informed are our best allies in supporting improvements necessary to maintain the highest drinking water standards.

For more information about this report, or for any questions relating to your drinking water, please call Scott Groats, Water Superintendent, at (607) 748-1514 ext.357. You may also contact the Broome County Department of Health at (607) 778-2887.

COMMUNITY PARTICIPATION

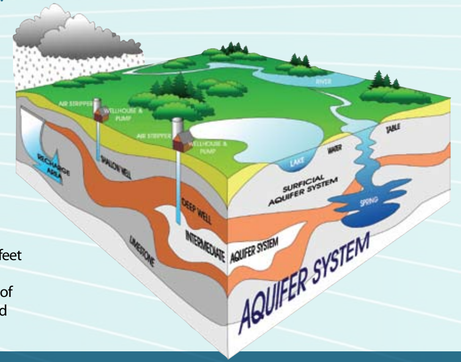
You are invited to participate in our public forum and voice your concerns about your drinking water. The Vestal Town Board meets the 2nd and 4th Wednesday of each month beginning at 7:30 p.m. at the Vestal Town Hall, located at 605 Vestal Parkway West, Vestal, NY.

WHERE DOES MY WATER COME FROM?

The Town of Vestal Water System is supplied from 6 groundwater wells situated along the south bank of the Susquehanna River. Water is withdrawn from depths of 100 feet to 200 feet and provides quality drinking water for our consumers. Our wells have a total daily production capacity of around 6 million gallons per day. Currently, our daily demand averages 3.1 million gallons per day. A seventh well (Well 1-1a) is currently operated by the U.S. Environmental Protection Agency and is available as an emergency backup.

In addition to the well supply, the Town has an agreement and connection with the City of Binghamton to supplement our daily needs in eastern Vestal. The agreement provides for an additional .5 million gallons per day if needed. The area supplemented from Binghamton extends from the Binghamton University Campus east to the City of Binghamton line. A similar connection also exists with the Village of Johnson City in the event of an emergency.

During 2009, our water system did not experience any restriction of our water sources.



WATER QUALITY

IMPORTANT HEALTH INFORMATION

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised 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 may be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. The U.S. EPA/CDC (Centers for Disease Control and Prevention) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline at (800) 426-4791.

SUBSTANCES THAT MIGHT BE IN DRINKING WATER

In general, 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 can pick up substances resulting from the presence of animals or from human activities. Contaminants that may be present in source water include: microbial contaminants; inorganic contaminants; pesticides and herbicides; organic chemical contaminants; and radioactive contaminants. In order to ensure that tap water is safe to drink, the State and the U.S. EPA prescribe regulations which limit the amount of certain contaminants in water provided by public water systems. The State Health Department's and the FDA's regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

RADON

Radon is a radioactive gas that occurs naturally in some ground water. It may pose a health risk when the gas is released from water into air, as occurs during showering, bathing, or washing dishes and clothes. Radon gas released from drinking water is a relatively small part of the total radon in air. Radon is released into homes and ground water from soil. Inhalation of radon gas has been linked to lung cancer; however, the effects of radon ingested in drinking water are not yet clear. We took six Radon (in water) samples in December, 2009. The range of the results were: a low of 134pCi/L (picocuries per liter) and a high of 680.3pCi/L, with an average of 436.1 pCi/L. If you are concerned about radon in your home, tests are available to determine the total exposure level. For additional information on how to have your home tested, contact Broome County Health Department, local water testing laboratories, or call (800) SOS-RADON.

SYSTEM IMPROVEMENTS

During 2009 we accomplished the following projects:

- Upgraded SCADA at remote facilities.
- Replaced 825 feet of undersized water main on Colonial and Ridgewood.
- Repaired 52 fire hydrants and replaced 4.
- Installed new variable speed drives at Well 4-2, Well 4-3, Well 4-4.
- Completed Emergency generator installations.

In 2010 we are planning the following system improvements:

- Additional SCADA improvements
- Storage Tank inspections
- Continue to replace undersize water main.
- Install surge protection at Wells 4-2, 4-3 and 4-4.

HOW IS MY WATER TREATED AND PURIFIED?

The treatment process consists of groundwater being pumped from the aquifer through packed tower aeration. Chlorine is then added for disinfection. We carefully monitor the amount of chlorine, adding the lowest quantity necessary to protect the safety of your water. Well field #4 near Prentice Road has provisions in place for granular activated carbon adsorption (filtration), if ever required. Fluoride (used to prevent tooth decay) and a corrosion inhibitor (used to protect distribution system pipes and household pipes) are added before the water is pumped to water storage tanks and into your home or business.

Our system is one of the many drinking water systems in New York State that provides drinking water with a controlled, low level of fluoride for consumer dental health protection. According to the United States Centers for Disease Control, fluoride is very effective in preventing cavities when present in drinking water at an optimal range from 0.8 to 1.2 mg/l (parts per million). To ensure that the fluoride supplement in your water provides optimal dental protection, the State Department of Health requires that we monitor fluoride levels on a daily basis. During 2009, monitoring showed fluoride levels in your water were in the optimal range 99.9 % of the time. None of the monitoring results showed fluoride at levels that approach the 2.2 mg/l MCL for fluoride.

CONTAMINATION FROM CROSS-CONNECTIONS

Cross-connections that could contaminate drinking water distribution lines are a major concern. A cross-connection is formed at any point where a drinking water line connects to equipment (boilers), systems containing chemicals (air conditioning systems, fire sprinkler systems, irrigation systems) or water sources of questionable quality. Cross-connection contamination can occur when the pressure in the equipment or system is greater than the pressure inside the drinking water line (backpressure). Contamination can also occur when the pressure in the drinking water line drops due to fairly routine occurrences (main breaks, heavy water demand) causing contaminants to be sucked out from the equipment and into the drinking water line (backsiphonage).

Outside water taps and garden hoses tend to be the most common sources of cross-connection contamination at home. The garden hose creates a hazard when submerged in a swimming pool or when attached to a chemical sprayer for weed killing. Garden hoses that are left lying on the ground may be contaminated by fertilizers, cesspools or garden chemicals. Improperly installed valves in your toilet could also be a source of cross-connection contamination.

Community water supplies are continuously jeopardized by cross-connections unless appropriate valves, known as backflow prevention devices, are installed and maintained. We have surveyed all industrial, commercial, and institutional facilities in the service area to make sure that all potential cross-connections are identified and eliminated or protected by a backflow preventer. We also inspect and test each backflow preventer to make sure that it is providing maximum protection.

For more information, visit the Web site of the American Backflow Prevention Association for a discussion on current issues (www.abpa.org).

WATER CONSERVATION TIPS

Water conservation measures are an important first step in protecting our water supply. Such measures not only save the supply of our source water, but can also save you money by reducing your water bill. Here are a few suggestions:

Conservation measures you can use inside your home include:

- Fix leaking faucets, pipes, toilets, etc.
- Replace old fixtures; install water-saving devices in faucets, toilets and appliances.
- Wash only full loads of laundry.
- Do not use the toilet for trash disposal.
- Take shorter showers.
- Do not let the water run while shaving or brushing teeth.
- Soak dishes before washing.
- Run the dishwasher only when full.

You can conserve outdoors as well:

- Water the lawn and garden in the early morning or evening.
- Use mulch around plants and shrubs.
- Repair leaks in faucets and hoses.
- Use water-saving nozzles.
- Use water from a bucket to wash your car, and save the hose for rinsing.

Information on other ways that you can help conserve water can be found at www.epa.gov/safewater/publicoutreach/index.html.

The information presented below depicts which contaminants were not detected in your drinking water:

Microbiological Contaminants: E. Coli.

272 Samples were taken during 2009.

Inorganic Chemical Contaminants: Antimony, Cadmium, Chromium, Mercury (inorganic), Selenium, Thallium, Color, Odor.

6 samples were taken in December 2009.

Volatile Organic Contaminants:

EPA 502.2 - VOC's: Benzene, Bromobenzene, Bromochloromethane, Bromomethane, n-Butylbenzene, sec-Butylbenzene, tert-Butylbenzene, CarbonTetrachloride, Chlorobenzene, Chloroethane, Chloromethane, 2-Chlorotoluene, 4-Chlorotoluene, Dibromomethane, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, Dichlorodifluoromethane, 1,1-Dichloroethane, 1,2-Dichloroethane, 1,1-Dichloroethene, cis-1,2-Dichloroethene, trans-1,2-Dichloroethene, 1,2-Dichloropropane, 1,3-Dichloropropane, 2,2-Dichloropropane, 1,1-Dichloropropene, cis-1,3-Dichloropropene, trans-1,3-Dichloropropene, Ethylbenzene, Hexachlorobutadiene, Isopropylbenzene, p-Isopropyltoluene(p-cymene), MethyleneChloride, n-Propylbenzene, Styrene, 1,1,1,2-Tetrachloroethane, 1,1,2,2,-Tetrachloroethane, Tetrachloroethene, Toluene, 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene, 1,1,1-Trichloroethane, 1,1,2-Trichloroethane, Trichloroethene, Trichlorofluoromethane, 1,2,3-Trichloropropane, 1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene, p/m-Xylene, o-/Xylene, Vinyl Chloride.

60 samples were taken in 2009.

Synthetic Organic Contaminants including Pesticides and Herbicides:

EPA 531.1 - Methylcarbamate Pesticides: Aldicarb, Aldicarb Sulfone, Aldicarb Sulfoxide, Carbofuran, Oxamly (vydate), Methomyl, 3-Hydroxycarbofuran, Carbaryl.

SOC's (EPA 508) - Organohalide Pesticides & P Toxaphene: PCB-aroclor 1016, PCB-aroclor 1221, PCB-aroclor 1232, PCB-aroclor 1242, aroclor 1248, PCB-aroclor 1254, PCB-aroclor 1260, Chlordane.

SOC's (EPA 515.3) - Chlorinated Acids: 2,4-D, Dalapon, Dicamba, Dinoseb, Pentachlorophenol, Pichloram, 2,4,5-TP (Silvex).

SOC's (EPA 525.2) NY: Alachlor, Atrazine, Simazine, Benzo(a)pyrene, Di(2-ethylhexyl) adipate, Di(2-ethylhexyl) phthalate, Hexachlorobenzene, Hexachlorocyclopentadiene, Aldrin, Chlordane (Total), Heptachlor, Methoxychlor, Lindane, Heptachlor Epoxide, Butachlor, Endrin, Metolachlor, Metribuzin, Propachlor, Dieldrin.

SOC's (EPA 504.1) - Microextrables: Ethylene dibromide (1,2-Dibromoethane), 1,2-Dibromo-3-chloropropane (DBCP).

6 samples were taken in September 2009

FACTS AND FIGURES

Our water system serves 22,200 people through 6,698 service connections. The total water produced in 2009 was 786.9 million gallons. The total water purchased from the City of Binghamton was nearly 30 million gallons. The daily average of water treated and pumped into the distribution system is 2.25 million gallons per day. The amount of water delivered to customers was nearly 706.7 million gallons. This leaves an unaccounted for total of 80.2 million gallons (13.5%). This water served municipal purposes such as flushing mains, fighting fires, and cleaning streets. A small amount was also lost to leaks in the system. In 2009, water customers were charged a minimum of $20.00 for the first 6,000 gallons and $1.99 per 1,000 gallons of water after that. In 2010 a capital improvement fee may be added.

SAMPLING RESULTS

During the past year we have taken hundreds of water samples in order to determine the presence of any radioactive, biological, inorganic, volatile organic or synthetic organic contaminants. The table below shows only those contaminants that were detected in the treated water. Although all of the substances listed here are under the Maximum Contaminant Level (MCL), we feel it is important that you know exactly what was detected and how much of the substance was present in the water.

Town of Vestal Water Department — Regulated Substances

Substance (Units)	Date Sampled	MCL	MCLG	Amount Detected	Range Low – High	Violation	Typical Source
Barium (ppm)	12/15/2009	2	2	0.116	.033 – 0.415	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Chloride (ppm)	12/15/2009	250	NA	43.7	31.9 – 57.8	No	Naturally occurring or indicative of road salt contamination
Iron (ppm)[4]	12/15/2009	.3	NA	0.056	ND – 0.253	No	Naturally occurring
Manganese (ppb)[4]	12/15/2009	300	NA	0.075	ND – 0.411	No	Naturally occurring
Nitrate (ppm)	12/15/2009	10	10	0.25	ND – 0.62	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Sulfate (ppm)	12/15/2009	250	NA	18.95	10.3 – 27.6	No	Naturally occurring
Haloacetic Acids (HAAs) (ppb)	Quarterly	60	NA	0.005	ND – 0.017	No	By-product of drinking water disinfection needed to kill harmful organisms
TTHMs [Total Trihalomethanes] (ppb)	Quarterly	80	NA	0.015	0.0036 – .0516	No	By-product of drinking water disinfection
Sodium[1] (ppm)	12/15/2009	N/A	See Health Effects[1]	20.37	16.8 – 24	No	Naturally occurring; Road salt; Water softeners; Animal waste
Radiological[5]							
Well 1-2	Gross Alpha	Quarterly	15	0	0.85	0.73 – 1.63	No	Erosion of natural deposits
Well 1-2	Radium-226	Quarterly	5	0	0.64	0.60 – 0.68	No	Erosion of natural deposits
Well 1-2	Radium-228	Quarterly	5	0	0.36	0.16 – 0.56	No	Erosion of natural deposits
Well 1-3	Gross Alpha	Quarterly	15	0	0.08	0.0 – 0.16	No	Erosion of natural deposits
Well 1-3	Radium-226	Quarterly	5	0	0.18	0.09 – 0.27	No	Erosion of natural deposits
Well 1-3	Radium-228	Quarterly	5	0	0.45	0.15 – 0.74	No	Erosion of natural deposits
Well 4-2	Gross Alpha	Quarterly	15	0	1.34	0.97 – 1.71	No	Erosion of natural deposits
Well 4-2	Radium-226	Quarterly	5	0	0.16	0.07 – 0.24	No	Erosion of natural deposits
Well 4-2	Radium-228	Quarterly	5	0	0.29	0.0 – 0.58	No	Erosion of natural deposits
Well 5-1	Gross Alpha	Quarterly	15	0	1.09	0.61 – 1057	No	Erosion of natural deposits
Well 5-1	Radium-226	Quarterly	5	0	0.85	0.07 – 0.10	No	Erosion of natural deposits
Well 5-1	Radium-228	Quarterly	5	0	0.16	0.0 – 0.32	No	Erosion of natural deposits

Town of Vestal Water Department — Lead and Copper *(Tap water samples were collected from 33 homes in the service area)*

Substance (Units)	Date Sampled	Action Level	MCLG	Amount Detected (90th%tile)	Range Low – High	Homes Above Action Level	Violation	Typical Source
Copper (ppm)[2]	2007	1.3	1.3	0.59	ND – 0.78	0	No	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives
Lead (ppb)[3]	2007	15	0	0.003	ND – 0.006	0	No	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives

1 Water containing more than 20 mg/l of sodium should not be used for drinking by people on severely restricted sodium diets. Water containing more than 270 mg/l of sodium should not be used for drinking by people on moderately restricted sodium diets.

2 The level presented represents the 90th percentile of the 33 sites tested. A percentile is a value on a scale of 100 that indicates the percent of a distribution that is equal to or below it. The 90th percentile is equal to or greater than 90% of the copper values detected at your water system. In this case, 33 samples were collected at your water system and the 90th percentile value was 0.78 (ppm). The action level for copper was not exceeded at any of the sites tested.

3 The level presented represents the 90th percentile of 33 samples collected. The action level for lead was not exceeded at any of the 33 sites tested.

4 Manganese is a secondary substance which is not associated with health risks and concerns, but deals with the aesthetics of water in regards to staining. If iron and manganese are present the total concentration of both should not exceed 500 ug/l.

Table Definitions

AL (Action Level): The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

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 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 the use of disinfectants to control microbial contamination.

MCL (Maximum Contaminant Level): 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.

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.

NA: Not applicable

ND: Not detected

TT (Treatment Technique): A required process intended to reduce the level of a contaminant in drinking water.

ppb (parts per billion): One part substance per billion parts water (or micrograms per liter).

ppm (parts per million): One part substance per million parts water (or milligrams per liter).

pCi/L (picocuries per liter): a measure of radioactivity in water.