

City of Wilmington

WaterWorks

A Newsletter Published by The City of Wilmington, Department of Public Works - Water Division

Volume 6 • Summer, 2008

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Source Water...

Where Does Our Water Come From?

Have you ever opened your tap and wondered where the water comes from? The City of Wilmington's source water is the Brandywine Creek. The Brandywine Creek watershed (the area of land that drains into the Creek) is located in portions of three Pennsylvania counties as well as our own New Castle County. In total, there are over 500 miles of stream in the watershed, which ultimately drains into the Delaware River. The main stem of the Brandywine is formed when the West and East Branches of the Brandywine merge just southwest of West Chester. The East and West Branches begin in the Appalachian foothills, known as the Welsh Hills, near Honey Brook, Pennsylvania. Depending on the stream flow conditions, the water can take anywhere from two to six days to travel from the headwaters in the Welsh Hills to the City's water intake on the Brandywine. During its travel, the water is influenced by agriculture, wildlife, stormwater runoff, industry and other point source discharges. Protecting the Brandywine is a high priority to the City; by looking upstream, we can help minimize the impacts and improve water quality.

Smiths Bridge spans the Brandywine near Montchanin.



City of Wilmington Source Water Protection Plan

The Brandywine Creek is the source of the water supply for 140,000 people in the Greater Wilmington Area. Investing in the protection and improvement of the Brandywine Creek is one of the most sustainable and cost effective ways to provide the safest and highest quality water to its customers. Facilitating this effort includes the development and implementation of a Source Water Protection Plan (SWPP).

What Will the SWPP Do?

Wilmington's Source Water Protection Plan will:

- Identify Wilmington's key water supply protection issues and potential impacts over the next 5 to 20 years.
- Determine the priority actions, geographic areas, sources of pollution, regulatory and policy needs and monitoring studies needed to protect Wilmington's water supply.
- Foster relationships, participation, communication, and coordination with upstream stakeholders and initiatives to protect the Brandywine Watershed.
- Provide a strategy to leverage existing and planned upstream efforts and sources of funding in the watershed to address water supply protection and watershed protection issues in a combined and cooperative manner.

What Are the Top Priority Issues for Wilmington's Water Supply?

Right now, preliminary information suggests the top priorities are turbidity (muddy water), pathogens (*Cryptosporidium* and *Giardia*), disinfection by-products precursors (humic and fulvic organics), algae, chloride (road salt), and emerging contaminants (see page three). Emergency response planning and communication are also important priorities.

What Is the City Currently Doing to Protect Source Water Quality?

The City has implemented an early warning system for turbidity by monitoring upstream conditions in real-time. When the Brandywine Creek gets too muddy, water is pumped from Hoopes Reservoir for treatment until the muddy conditions subside. The City is also supporting the Brandywine Conservancy in conservation projects in the watershed and meeting with several other watershed groups offering support to other initiatives in the watershed. Finally, the City has created a source water protection area within the City and, in conjunction, is developing a source water protection ordinance for introduction to Council in the Summer of 2008.

Headwaters of the Brandywine Creek,
where the City's water originates.

What Are the Early Draft Recommendations of the Plan?

Preliminary information suggests the following general recommendations, but as the SWPP evolves, these may be adjusted or refined to include more specific geographical or technical priorities and objectives.

Agricultural Preservation and Management – Fencing livestock out of streams and managing nutrient runoff from upstream farms are strong priorities to reduce sources of sediment, pathogens, nutrients and pharmaceuticals.

Land Preservation and Easements – Preserve forested lands. Since less forested lands translates into poor water quality, it is important to preserve the existing forests.

Riparian Buffer Protection/Creation – A buffer of vegetation serves as a filter between land and waterways and can reduce erosion and transport of sediment downstream.

Stormwater Runoff Management – Significantly reduce paved surfaces or impervious cover in the watershed for 20-50 years. Re-focus capital investments programs to stream improvement programs for water quality, habitat and aquatic life.

Wastewater Treatment for Emerging Contaminants and Pathogens – As wastewater facilities upgrade technologies, implement methods to eliminate emerging pathogens.

Improved Monitoring Studies – Focus on finding the sources of bacteria and *Cryptosporidium* in the watershed so effective watershed controls can be implemented and monitored.

Investing in the protection and improvement of the Brandywine Creek is one of the most sustainable and cost effective ways to provide the safest and highest quality water to our customers, improve emergency response communication, and meet future regulatory compliance. If you have additional questions regarding this effort, you can contact the City's Water Quality Manager at **302-573-5522**.

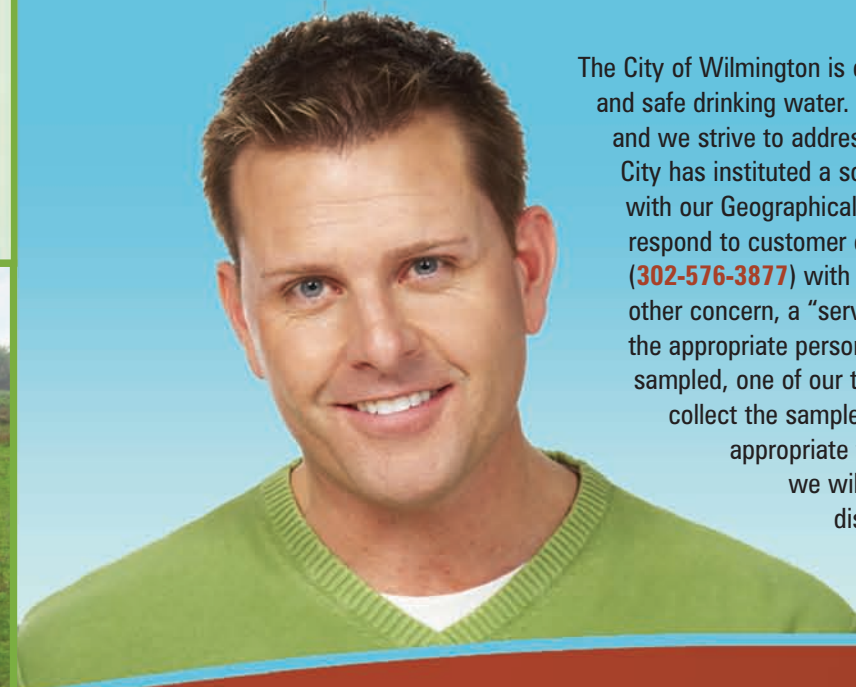


"Emerging Contaminants" Being Watched Closely

Advancements in water quality science now make it possible to detect even extremely small amounts of chemicals in our water supply that were not detected in the past. New, or "emerging," contaminants include such things as household, industrial and agricultural chemicals – specifically, cleaners, solvents, fire retardants and plastics, pesticides and disinfectants – and pharmaceuticals and personal care products such as fragrances, hormones, antibiotics and other drugs. Recent reporting on these emerging contaminants reveals they are present in our waterways only in very low concentrations, with many detected in parts per trillion. However, since these substances have raised health concerns, the City's Department of Public Works will continue to be vigilant in testing and analyzing treated water samples to assure public safety.



Water Quality Manager's Minute Water Quality Problem? What to do.



The City of Wilmington is committed to providing you with high quality, good tasting and safe drinking water. We also understand that concerns may arise at your tap and we strive to address these quickly and efficiently. To assist in this effort, the City has instituted a software program called CityWorks. CityWorks is integrated with our Geographical Information System (GIS), making it easier to track and respond to customer complaints. When a customer calls the complaint line (**302-576-3877**) with a water concern such as low pressure, rusty water or other concern, a "service request" is created in CityWorks and is forwarded to the appropriate personnel for immediate action. If you would like your water sampled, one of our technicians will call you to set up a convenient time to collect the sample. This process ensures all issues are dealt with in an appropriate time frame. As this tracking system is utilized over time, we will be analyzing the data to see if there are any ongoing distribution areas that may need future work.

Delaware's Source Water Assessment Program

As mandated in the Safe Water Drinking Act (amended in 1996), the Delaware Source Water Assessment Program (SWAP) analyzes existing and potential threats to the quality of public drinking water supplies. Vigilance is vital to assure the safety of our water supply. Keeping public drinking water supplies safe is the shared responsibility of federal, state and local agencies, water suppliers, and now more than ever – consumers. The Division of Public Health in conjunction with the Department of Natural Resources and Environmental Control (DNREC) has conducted source water assessments for nearly all community water systems in the state.

Wilmington's assessment included review of approximately 319 square miles of the watershed, located upstream of the two intakes on the Brandywine Creek and within two miles of the Hoopes Reservoir watershed.

The City of Wilmington's source water on the Brandywine Creek was determined to have the highest susceptibility to contamination from pathogens and metals, based on monitoring data. It is also highly susceptible to nutrients, petroleum hydrocarbons and other organics.

In the Delaware portion of the watershed, the assessment identified 24 discrete sources of contamination in the land areas closest to the Brandywine Creek which could potentially have



the greatest impact on water quality. The majority of these sources were underground storage tanks. In Pennsylvania, 72 sources were identified, the majority of which were associated with wastewater and storm water discharges. Non-point sources or storm water runoff can also potentially contribute to contamination. Wooded areas and agriculture were identified as the predominant land uses in the Wilmington SWA and were determined to be low sources of contaminants.

More detailed information is available in the City of Wilmington Source Water Assessment Report, which can be found on the Delaware SWAP website (<http://www.wr.udel.edu/swaphome/index.html>). Contact the Water Quality Laboratory at (302) 573-5522 regarding the SWAP availability and how to obtain a copy.

Distribution System Improvements Water Main Replacement

During 2007, the City of Wilmington continued its water main replacement program. The program resulted in the removal of approximately 875 linear feet of water main. This year's program focused on locations within the Wawaset Park neighborhood of Wilmington and the Gordon Heights neighborhood in New Castle County. These areas were chosen based on criteria such as age and history of breaks.

In addition, The City also installed approximately 2,724 linear feet of new water main along Concord Pike, Elsmere Boulevard and across from the Rock Manor Golf Course.

New Castle Avenue Elevated Water Storage Tank

During 2007, the City of Wilmington re-painted and performed several needed renovations to its New Castle Avenue elevated water storage tank, such as installing a new riser cage and roof vent. This tank serves a portion of the New Castle area including the Dunleith and Rose Hill Gardens neighborhoods.

The City of Wilmington 2007 Water Quality Report



How We Test Our Drinking Water

The Wilmington Water Division monitors for over 100 contaminants, including herbicides, pesticides, *Cryptosporidia*, *Giardia*, and coliform bacteria. We collect samples from the Brandywine Creek, Hoopes Reservoir, Porter Reservoir, Cool Spring Reservoir, the filtration plants, and at customers' taps in the distribution system.

Last year, over 30,000 water samples were drawn from the City's fresh water supply treatment plants, and distribution system. Our laboratory performed over 70,000 water analyses on those samples. This data supports the conclusion that Wilmington's water system complies with all applicable EPA drinking water regulations.

During disinfection, certain by-products form as a result of chemical reactions between chlorine and naturally occurring organic matter in water. These are carefully controlled to keep disinfection effective and by-product levels low.

About This Report..

The Environmental Protection Agency (EPA) requires the City of Wilmington, and all other water suppliers in the US, to report yearly on specific details about testing for a number of contaminants in our water. Chemical and biological monitoring provides the data that helps suppliers such as the City of Wilmington make key water quality management decisions to ensure freshness and purity.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. To ensure that tap water is safe to drink, the EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) regulates bottled water, which must provide the same protection to the public's health.

To ensure that tap water is safe to drink, the EPA prescribes regulations which limit the amount of certain contaminants in public water systems.

Protecting the Public from Disease

Potential Contaminants

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 occur naturally 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 by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff and septic systems.

Radioactive Contaminants, which can occur naturally or as a result of oil and gas production and mining activities.

Contacts

In addition, during this time of heightened watchfulness, you can help us ensure the safety of our water supply by reporting any unusual or suspicious activity either on our waterways, near our reservoirs, water filtration plants, water towers or pumping stations.

To report an incident, or general water quality concerns, call the City Call Center, **(302) 576-3877**. If you have questions about this report, call the Water Quality Laboratory at **(302) 573-5522** or **(302) 571-4158**. Weekends or after 5 P.M. – **(302) 571-4150**.

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.

Microbiological testing of water helps protect the public from waterborne diseases such as polio, diphtheria, typhoid, and cholera. Chlorine is very effective at killing or disinfecting most of these organisms in drinking water. However, *Cryptosporidium*, a microbial pathogen found in surface waters throughout the US, is resistant to chlorine. Optimized water treatment including filtration provides an effective barrier against passage of *Cryptosporidium* into drinking water. One commonly used measure of this treatment effectiveness is turbidity removal. Average turbidity levels of 0.04 NTU and 0.03 NTU at Brandywine and Porter Filter plants respectively are well below EPA's limit of 0.3 NTU (for 95 percent of monthly samples).

The most commonly-used filtration methods, such as those used by Wilmington, cannot guarantee 100% removal. The City of Wilmington began monitoring for *Cryptosporidium* in source water for its two plants beginning in November of 2005. In 2007, average levels of *Cryptosporidium* were 3 and 1 per 100 L of raw water at Brandywine and Porter Filter plants, respectively. Based on research conducted on the removal of *Cryptosporidium* by common filtration methods, the level detected in the source water should have been removed by the filters at the City's treatment plant. *Cryptosporidium* has never been detected in the treated water supply.

Important Health Note for "At Risk" Populations

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons, such as those with cancer undergoing chemotherapy, organ transplant recipients, people with HIV/AIDS or other immune system disorders, the elderly, and infants can be particularly vulnerable to infections. These people should seek advice from their health care providers. EPA/CDC guidelines on appropriate ways to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline **(800-426-4791)**.

Water Quality Statistics

Table 1: Water Quality Results - Detected Primary^[1] Parameters at Entry Points to Distribution System

				Brandywine Filter Plant				Porter Filter Plant				
Contaminant	Units	MCLG ^[2]	MCL ^[3] or TT ^[4] ^[5]	Average	Lowest Detected Level	Highest Detected Level	Violation	Average	Lowest Detected Level	Highest Detected Level	Violation	Source
Microbiological Indicators												
Turbidity - Percentile	% of samples below 0.3	Not Applicable	95% of monthly samples must be less than 0.3	99.9	98.9	100	No	100	100	100	No	Soil runoff
Turbidity - Values	NTU		No sample must ever exceed 1.0			0.56	No			0.26	No	Soil runoff
Inorganic Chemicals (Metals and Nutrients)												
Barium	ppm	2	2	0.03	0.03	0.03	No	0.03	0.03	0.03	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Chromium	ppb	100	100	2.3	1.1	3.5	No	3.3	3.3	3.3	No	Discharge from steel and pulp mills; Erosion of natural deposits
Nickel	ppb	100	100	2.5	2.4	2.6	No	2.2	2.2	2.2	No	Discharge from steel mills, metal refineries and electronic industries
Fluoride	ppm	4	2/4 ^[6]	0.9	0.08	1.6	No	1.0	0	1.8	No	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories
Nitrate	ppm	10	10	2.0	0.9	2.9	No	2.0	1.5	2.5	No	Runoff from fertilizer use; Leaching from septic tanks; Sewage; Erosion of natural deposits
Nitrite	ppm	1	1	0.01	0.002	0.132	No	0.01	0.002	0.037	No	Runoff from fertilizer use; Leaching from septic tanks; Sewage; Erosion of natural deposits
Disinfectants												
Chlorine	ppm		At least 0.3 residual entering Distribution System		1.0		No		1.4		No	Water additive used to control microbes
Disinfection Byproduct Precursors												
Total Organic Carbon	ppm			1.3	0.8	2.7		1.2	0.7	2.0		Naturally present in the environment. Total organic carbon (TOC) has no health effects. However, TOC provides a medium for the formation of disinfection byproducts
Total Organic Carbon	% Removal (Raw to Treated)		Must exceed 35	46	20	67		43	29	65		
Total Organic Carbon	Compliance Ratio		Ratio must be greater than or equal to 1	1.3 ^[7]				1.3 ^[7]				
Radionuclides												
Gross Alpha Particle Activity	pCi/L		15	0.51 (2006)			No	0.17 (2006)			No	Erosion of natural deposits of certain minerals that are radioactive and may emit a form of radiation known as alpha radiation

*See Key to Tables on page 9.



Table 2: Water Quality Results - Detected Primary^[1] Parameters in Distribution System

Contaminant	Units	MCLG ^[2]	MCL ^[3] or TT ^[4] [5]	Average	Lowest Detected Level	Highest Detected Level	Violation	Source
Microbiological Indicators								
Total Coliform	% of samples positive each month	0%	5%	0.2	0	0.8	No	Bacteria that are naturally present in the environment. Used as an indicator of the presence of other potentially harmful bacteria.
Lead and Copper (based on 2005 sampling–testing is done every three years)								
Lead	ppb	0	90% of tap water samples must be less than the Action Level of 15	8.5 ^[9]	0.5	45	No	Corrosion of household plumbing systems
Copper	ppm	1.3	90% of tap water samples must be less than the Action Level of 1.3	0.24 ^[9]	0.015	0.59	No	Corrosion of household plumbing systems
Disinfectants								
Chlorine	ppm	MRDLG = 4.0 ^[11]	MRDL = 4.0 ^[10]	1.3	1.06 ^[12]	1.72 ^[12]		Water additive used to control microbes
Disinfection Byproducts								
Total Trihalomethanes	ppb	Not Applicable ^[9]	80: Based on Running Annual Average of Quarterly Samples	33 ^[8]	15	78	No	Byproduct of drinking water disinfection. Forms due to reaction of chlorine with total organic carbon.
Bromodichloromethane	ppb	0	None	9	5	16	No	
Bromoform	ppb	0	None	0.6	0.5	0.8	No	
Dibromochloromethane	ppb	60	None	3	2	6	No	
Haloacetic Acids	ppb	Not Applicable ^[9]	60: Based on Running Annual Average of Quarterly Samples	18 ^[8]	7	58	No	Byproduct of drinking water disinfection. Forms due to reaction of chlorine with total organic carbon.
Dichloroacetic Acid	ppb	0	None	9	4	32	No	
Trichloroacetic Acid	ppb	300	None	9	3	27	No	

Table 3: Secondary^[13] Parameters and Other Parameters of Interest at Entry Points to Distribution System

			Brandywine Filter Plant			Porter Filter Plant			
Contaminant	Units	SMCL ^[14]	Average	Lowest Detected Level	Highest Detected Level	Average	Lowest Detected Level	Highest Detected Level	Source
Conventional Physical and Chemical Parameters									
pH	pH units	6.5 - 8.5	7.19	6.8	7.8	7.24	6.9	7.8	Waters with pH = 7.0 are neutral
Alkalinity	ppm as CaCO ₃	None	48.9	32	63	46	non-detect	63	Measure of buffering capacity of water or ability to neutralize an acid
Hardness	ppm as CaCO ₃	None	116	98	147	111	80	140	Naturally occurring; Measures Calcium and Magnesium
Conductivity	μmhos/cm	None	368	244	702	359	244	607	General measure of mineral content
Total Dissolved Solids (TDS)	ppm	500	219	219		246	246		Metals and salts naturally occurring in the soil; Organic matter
Chloride	ppm	None	62	46	165	63	39	170	Naturally occurring; Chemical additive to treat the water; Road salt application and run-off
Metals									
Iron	ppb	300	30	non-detect	930	20	5	160	Naturally occurring; Chemical additive to treat the water; Corrosion of pipes, can cause discoloration in water
Manganese	ppb	50	10	non-detect	77	10	non-detect	27	Naturally occurring; Can cause discoloration and objectionable taste in water
Zinc	ppb	5000	170	23	1164	140	13	472	Naturally occurring; Chemical additive to treat the water

Key to Tables

- [1] Primary parameters are contaminants that are regulated by a maximum contaminant level (MCL), because above this level consumption may adversely affect health of the consumer.
- [2] MCLG - Maximum Contaminant Level Goal is the level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow no margin of safety.
- [3] MCL - Maximum Contaminant Level is 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.
- [4] TT – Treatment Technique refers to the required process intended to reduce the level of a contaminant in drinking water. EPA’s surface water treatment rules require systems to (1) disinfect their water and (2) filter their water such that the specific contaminant levels cited are met. Lead and copper are regulated by a Treatment Technique that requires systems to control the corrosiveness of their water. Total organic carbon is regulated by a Treatment Technique that requires systems operate with enhanced coagulation or enhanced softening to meet specified percent removals.
- [5] Unless otherwise indicated value given is a MCL.
- [6] State limit is not to exceed 2.0 mg/L. Federal MCL is 4.0 mg/L.
- [7] Cited average is the lowest running annual average calculated from monthly samples in 2007.
- [8] Cited average is highest running annual average calculated from quarterly samples in 2007.
- [9] Value given is not an average, but the 90th percentile action level.
- [10] MRDL - Maximum Residual Disinfectant Level is the highest level of a disinfectant allowed in drinking water.
- [11] MRDLG - Maximum Residual Disinfectant Level Goal is the level of drinking water disinfectant below which there is no known or expected health risk.
- [12] Cited value is the lowest and highest average of 123 routine samples per month.
- [13] Secondary parameters are contaminants that are regulated by non-enforceable guidelines because the contaminants may cause non-health related cosmetic effects, such as taste, odor, or color.
- [14] SMCL: Secondary Maximum Contaminant Level is the level of a physical, chemical or biological contaminant in drinking water above which the taste, odor, color or appearance (aesthetics) of the water may be adversely affected. This is a non-enforceable guideline which is not directly related to public health.

ppb Parts per billion.
ppm Parts per million.

Table 4: Other Primary Contaminants Tested, But Not Detected in 2006

Radioactive	Volatile Organic Chemicals
Uranium-238	Benzene
	Carbon Tetrachloride
Synthetic Organic Chemicals	O-Dichlorobenzene
2,4,5-TP	P-Dichlorobenzene
2,4-D	1,2-Dichloroethane
Alachlor	1,1-Dichloroethylene
Atrazine	cis-1,2-Dichloroethylene
Benzo(a)pyrene	Dichloromethane
Carbofuran	1,2-Dichloropropane
Chlordane	Ethylbenzene
Dalapon	Methyl Tert Butyl Ether
Di(2-ethylhexyl)-adipate	Monochlorobenzene
Di(2-ethylhexyl)-phthalate	Styrene
Dibromochloropropane	Tetrachloroethylene
Dinoseb	1,2,4-Trichlorobenzene
Endrin	1,1,1-Trichloroethane
Ethylene Dibromide	1,1,2-Trichloroethane
Heptachlor	Toluene
Heptachlor Epoxide	Trichloroethylene
Hexachlorobenzene	Vinyl Chloride
Hexachlorocyclopentadiene	Xylenes
Methoxychlor	Inorganic Chemicals
Oxamyl(Vydate)	Antimony
Pentachlorophenol	Arsenic
Picloram	Beryllium
Polychlorinated Biphenyls	Cadmium
Simazine	Mercury
Toxaphene	Selenium
	Thallium

Frequently Asked Questions FAQs

Jr. WATERworks

1. My water is rusty – is it safe to drink? What if it stains my laundry?

Although unsightly, iron is not regulated by the State or EPA as a health hazard. It occurs naturally as water passes through corroding pipes that lead to your tap. If you notice a few stains on your laundry, keep the clothes wet. Do not put them in your dryer. Call the City's Water Quality Laboratory (see numbers in blue box below), and a technician will supply a special rust-removing chemical. Before doing your next load, run a laundry cycle and make sure any rust in the pipes has cleared.

2. There is a pinkish substance on my bathroom fixtures – is that from the water?

Pink residue is less likely a problem associated with water quality than with naturally occurring airborne bacteria that appears on surfaces that are moist, such as toilet bowls, showerheads, sink drains and tiles. The best solution to keep these surfaces free from this bacterial film is continual cleaning with a solution that contains chlorine. Chlorine bleach also can be periodically stirred into the toilet bowl. It also helps to keep bath surfaces wiped down and dry.

3. My water smells or tastes funny. Will it make me sick?

It will not make you sick. The majority of complaints about smell are associated with chlorine. Sodium hypochlorite, or chlorine bleach, is used as a disinfectant to keep water safe to drink.

Water tastes better cold. Try flushing water from your cold kitchen faucet until you notice a temperature difference – this ensures that you are receiving fresh water and not water that has sat in your household plumbing. Fill a jug or container and put the water in your refrigerator. Letting the water sit in a container will eliminate most or all of the chlorine taste and odor.

We try to prevent seasonal odors in tap water by adding activated carbon to the water at our treatment plants. The carbon absorbs most of the musty smelling non-toxic chemicals given off by algae, bacteria and tiny fungi that sometimes grow in our source water, the Brandywine Creek.

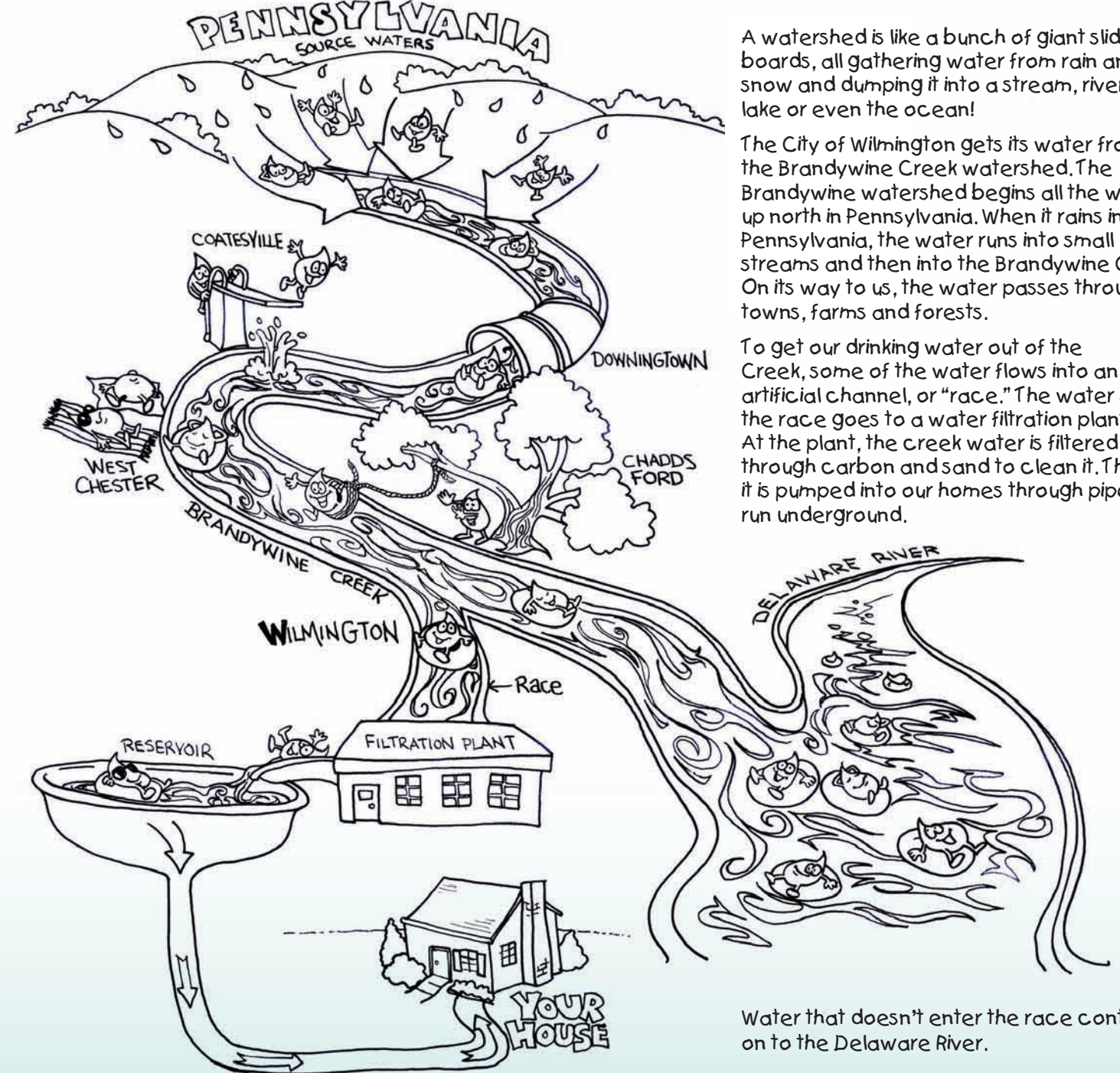
4. Should I filter my tap water?

Water is treated at one of two treatment plants and exceeds all requirements of the Safe Drinking Water Act. That said, there are old iron water mains in the City that we are working to replace, so you may experience intermittent problems with rust. If you are experiencing rust, a 5-micron cartridge-type filter available at local hardware stores for a few hundred dollars will easily remove the rust. Reverse osmosis, water softening systems, etc., cost thousands of dollars and will not necessarily provide any additional health benefit. If you do find the need to use a water filter of any type, please remember that these filters will clog and need to be replaced per manufacturer recommendations.

5. Why does my water have white particles in it?

Lime (a white powdery substance made of mostly calcium) is used to adjust pH on the water – this limits its corrosion potential when traveling through metal pipes. Draining your hot water heater can help eliminate lime accumulations.

Should you have any additional questions or concerns about your drinking water, feel free to call the City Call Center, (302) 576-3877, the Water Quality Laboratory at (302) 571-4158 (the main lab number) or (302) 573-5522 (lab supervisor's number). The laboratory is open 8:00 A.M. to 5:00 P.M. Monday through Friday.



A watershed is like a bunch of giant sliding boards, all gathering water from rain and snow and dumping it into a stream, river, a lake or even the ocean!

The City of Wilmington gets its water from the Brandywine Creek watershed. The Brandywine watershed begins all the way up north in Pennsylvania. When it rains in Pennsylvania, the water runs into small streams and then into the Brandywine Creek. On its way to us, the water passes through towns, farms and forests.

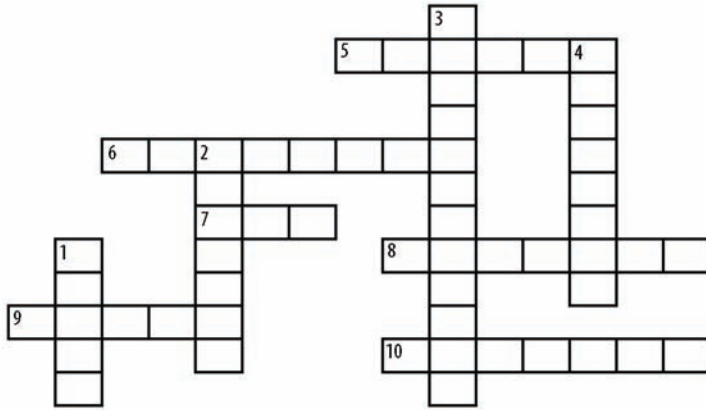
To get our drinking water out of the Creek, some of the water flows into an artificial channel, or "race." The water in the race goes to a water filtration plant. At the plant, the creek water is filtered through carbon and sand to clean it. Then it is pumped into our homes through pipes that run underground.

Water that doesn't enter the race continues on to the Delaware River.

Color it Awesome!

Conservation Crossword Puzzle

For answers, see bottom of Page 3



Down

1. Wash your car on the _____. This will water your lawn at the same time.
2. Shorten your _____. Even a one or two minute reduction can save up to 700 gallons per month.
3. Water _____ is the most cost-effective and environmentally sound way to reduce our demand for water.
4. Use a commercial car wash that _____ water.

Across

5. Minimize evaporation by watering during the early morning hours, when temperatures are _____ and winds are lighter.
6. _____ your water pipes to get hot water faster and avoid wasting water.
7. Turn _____ the water while you shave and save more than 100 gallons a week.
8. Fix leaky _____ and plumbing joints and save 20 gallons per day for every leak stopped.
9. _____ your lawn only if needed. Here's an easy way to check. If the grass springs back when you lift your foot, it doesn't need it.
10. Use the garbage disposal sparingly. _____ instead and save gallons every time.



Wilmington
In the middle of it all

James M. Baker, Mayor

Kash Srinivasan, Commissioner

Department of Public Works

Louis L. Redding City/County Bldg.

800 French Street • Wilmington, DE 19801-3537

Henry W. Supinski

City Treasurer

City Council Members:

The Honorable Theodore Blunt
President of City Council

The Honorable Paul Ignudo, Jr.
City Council Member, 7th District

The Honorable Charles Potter, Jr.
City Council Member, 1st District

The Honorable R. Cambell Hay
City Council Member, 8th District

The Honorable Norman D. Griffiths
City Council Member, 2nd District

The Honorable Michael A. Brown, Sr.
City Council Member-at-Large

The Honorable Stephanie T. Bolden
City Council Member, 3rd District

The Honorable Charles M. Freel
City Council Member-at-Large

The Honorable Hanifa G.N. Shabazz
City Council Member, 4th District

The Honorable Theopolis K. Gregory
City Council Member-at-Large

The Honorable Samuel Prado
City Council Member, 5th District

The Honorable Loretta Walsh
City Council Member-at-Large

The Honorable Kevin F. Kelley, Sr.
City Council Member, 6th District

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