

# 2015

## Drinking Water Quality Report Featuring data collected in 2014

This report is produced for you as a requirement of the Federal Safe Drinking Water Act. NOTE: Industrial and commercial customers, including hospitals, medical centers and health clinics, please forward this report to your Environmental Compliance Manager.

PWD's Public Water System Identification #PA1510001



**PHILADELPHIA**  
**WATER**  
EST. 1801

Philadelphia's water is safe and healthy to drink for most people. For people with special health concerns, please see the information on page 3.

Available online at [www.phila.gov/2015waterquality](http://www.phila.gov/2015waterquality).



## PLEASE SHARE THIS REPORT

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail. To receive a printed copy of this report, please email: [waterquality@phila.gov](mailto:waterquality@phila.gov).

Para obtener una copia del informe en Español sobre los resultados más recientes de la calidad del agua publicado por el Departamento de Agua de Philadelphia, llame al 215-685-6300.

## TABLE OF CONTENTS

3	Message from Philadelphia Water's Commissioner
3	People with Special Health Concerns
4	Where Does Philadelphia's Drinking Water Come From?
5	Safeguarding The Water You Drink
6	Water Treatment Diagram
8	Partnership For Safe Water
8	Chlorine in Drinking Water
9	Lead In Drinking Water
10	Research And Monitoring: Pharmaceuticals and Source Water
11	Fluoride in Drinking Water
11	Cryptosporidium and Giardia
12	What Do We Look For?
13	Glossary
14	2014 Drinking Water Quality Results
18	The Fairmount Water Works
19	Clean Water Begins And Ends With You
21	Schuylkill And Delaware River Source Water Protection Plans
22	Soak it Up Adoption

### Philadelphia Water is an active member of:

American Water Resources Association  
 American Water Works Association  
 Partnership for Safe Water  
 American Public Works Association  
 Association of Metropolitan Water Agencies  
 Clean Water American Alliance  
 National Association of Clean Water Agencies  
 Partnership for the Delaware Estuary  
 Schuylkill Action Network  
 Schuylkill River Restoration Fund  
 Tookany/Tacony-Frankford (TTF) Watershed Partnership  
 U.S. Water Alliance  
 Water Environment Federation  
 Water Environment Research Foundation  
 Water Research Foundation

# PHILADELPHIA WATER

## A MESSAGE FROM PHILADELPHIA WATER'S COMMISSIONER

Nearly 2000 highly trained and dedicated Philadelphia Water employees ensure that you get clean, reliable water; 24 hours a day, seven days a week. Think of them every time you turn on the faucet for a glass of water!

Our annual Drinking Water Quality Report tells the story of how we make this happen through our continuous treatment, testing, and monitoring. This report, published in the spring of 2015, includes water quality information for the 2014 calendar year. We, along with our partners at the U.S. Environmental Protection Agency, hope you take the time to look this document over and, if you have any questions, my staff and I would be very pleased to discuss.

In addition, we have simplified our name to Philadelphia Water. It is who we are and what we will always be. From our beginnings in 1801 to our Green City, Clean Waters program of today, we have always kept our mission in mind: to plan for, operate and maintain both the infrastructure and the organization necessary to purvey high-quality drinking water; to provide an adequate and reliable water supply for all household, commercial, and community needs; and to sustain and enhance the region's watersheds and quality of life by managing wastewater and stormwater effectively.

The planet is changing and we are too.



Howard M. Neukrug, P.E., BCEE  
Water Commissioner

**Our standards are the highest:**  
Philadelphia's drinking water quality is better than all drinking water standards developed by the EPA to protect public health.



## PEOPLE WITH SPECIAL HEALTH CONCERNS

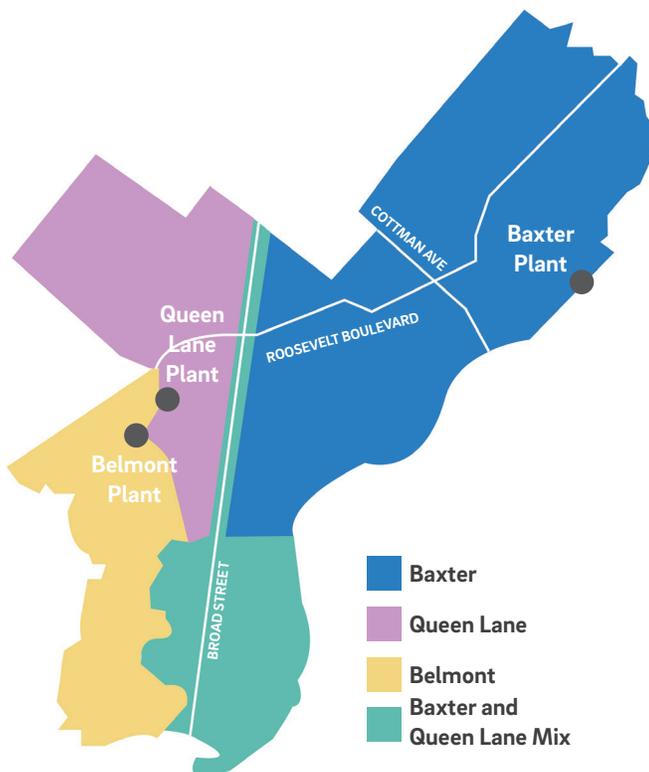
Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons, such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS and other immune system disorders, some elderly and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers.

U.S. Environmental Protection Agency (EPA)/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline: 800-426-4791.

## WHERE DOES PHILADELPHIA'S DRINKING WATER COME FROM?

**The water we treat comes from the Schuylkill and Delaware rivers.** Rivers are surface water supplies. Philadelphia does not use groundwater. Each river contributes approximately one-half of the City's overall supply. We produce approximately 250 million gallons of high-quality drinking water for our customers on a daily basis.

The Philadelphia Water Department (PWD) has three water treatment plants that process untreated river water. Depending on where you live, you receive drinking water from one of these three plants. The Queen Lane Plant is located in East Falls and its water comes from the Schuylkill River. Its intake is located along Kelly Drive. The Belmont Plant is located in Wynnefield and its water also comes from the Schuylkill River. Its intake is located along Martin Luther King, Jr. Drive. The Baxter Plant is located in Torresdale and its water comes from the Delaware River. Its intake is located at the plant on the Delaware River.



Philadelphia is located in the Delaware River Watershed, which begins in New York State and extends 330 miles south to the mouth of the Delaware Bay. The Schuylkill River is part of the Delaware River Watershed.

## SAFEGUARDING THE WATER YOU DRINK



Today, the City enjoys watersheds that are cleaner and healthier than they have been in well over a century.

### HOW DO DRINKING WATER SOURCES BECOME POLLUTED?

Across the nation, rivers, lakes, streams, ponds, reservoirs, springs and wells are sources of drinking water (both tap water and bottled water). Rain and melting snow travels over the surface of the land or through the ground, dissolving naturally occurring minerals and picking up substances resulting from animal and human activity and carrying these pollutants to our drinking water sources.

Contaminants that may be present in source water include:

- Microbial contaminants, such as viruses and bacteria, from sewage treatment plants, septic systems, agricultural livestock operations and wildlife.
- Inorganic contaminants, such as salts and metals can be naturally occurring or come from urban stormwater runoff (streets and parking lots), industrial or domestic wastewater discharges, oil and gas production, mining or farming.
- Pesticides and herbicides from a variety of sources such as agriculture, urban stormwater runoff and residential uses.
- Organic chemical contaminants, including synthetic and volatile organic chemicals, are byproducts of industrial processes and petroleum production. They can also come from gas stations, urban stormwater runoff and septic systems.
- Radioactive contaminants can be naturally occurring or can come from oil and gas production, mining activities or medical use.

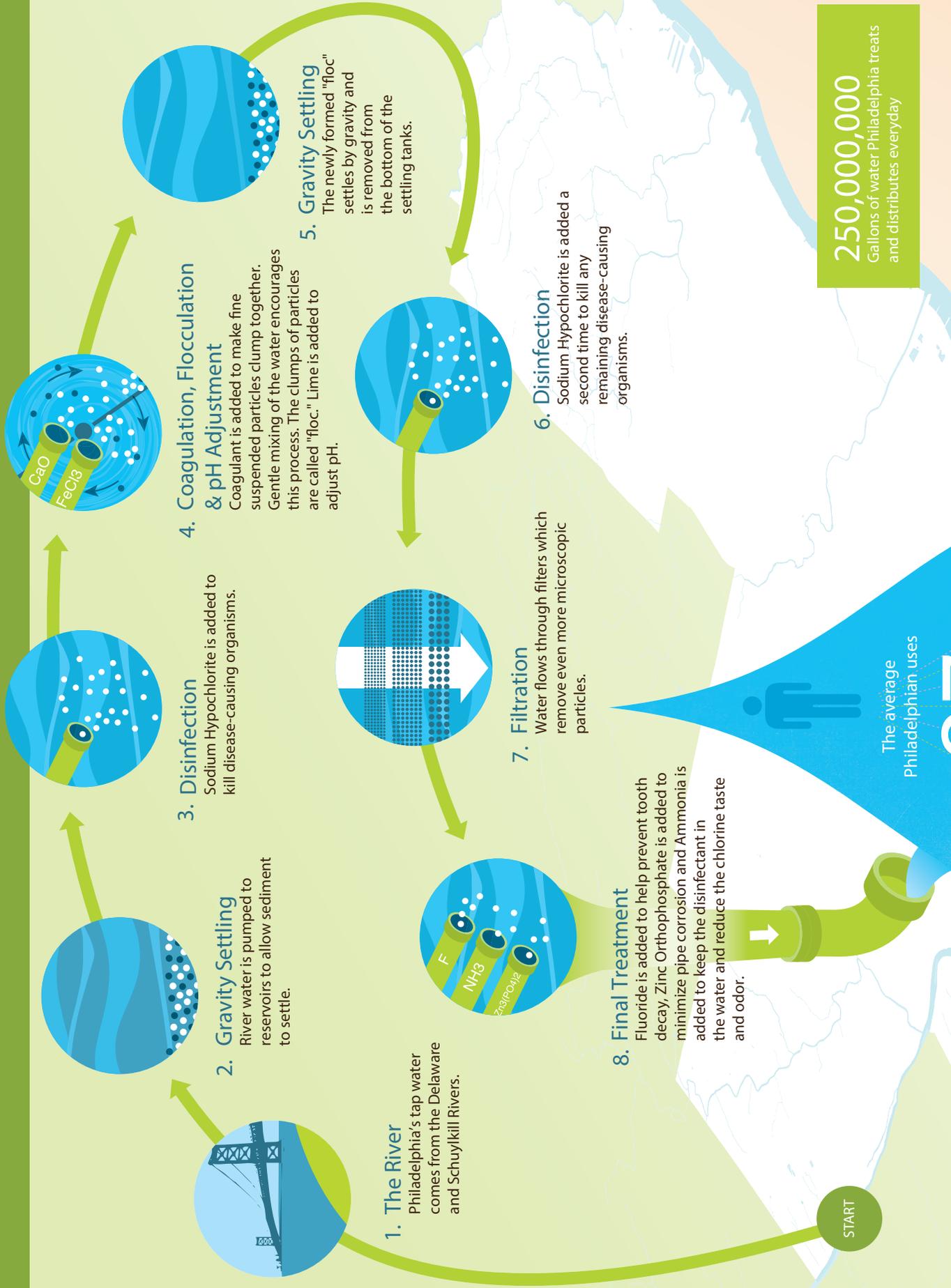
At their sources, the Delaware and Schuylkill Rivers are generally clean. But as the rivers flow downstream, they pick up contaminants from many sources — stormwater runoff washes pollutants on the land into the rivers, and communities and industries discharge used water back into the rivers. Today, the City enjoys watersheds that are cleaner and healthier than they have been in well over a century. Although we have seen a dramatic improvement in the water quality of the City's two major rivers since the passage of the Federal Clean Water Act in the early 1970s, there is still more work that needs to be done to protect our drinking water sources from pollution.

In order to ensure that tap water is safe to drink, the U.S. Environmental Protection Agency (EPA) has regulations that limit the amount of certain contaminants in water provided by water suppliers. The Food and Drug Administration establishes limits for contaminants in bottled water that must provide the same protection for public health.

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. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline, 800-426-4791, or from their website: [www.epa.gov/safewater](http://www.epa.gov/safewater).

# How Do We Make Water Drinkable?

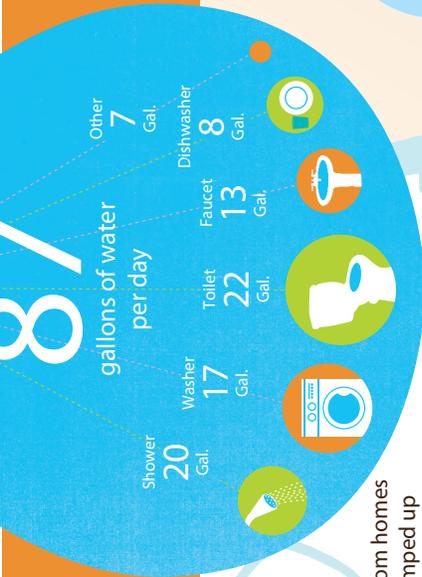
Like the majority of water utilities in the U.S., we use a multi-step treatment process at all three of our drinking water treatment plants. This Water Treatment Process diagram provides a brief description of drinking water treatment in Philadelphia.



**250,000,000**  
Gallons of water Philadelphia treats and distributes everyday

# How Do We Process Wastewater?

After water is used, PWD is responsible for cleaning it before returning the water to the river. This is the Wastewater Treatment Process. We return about 98% of the water that we withdraw for our use to the river.



## 1. Collection & Pumping

Wastewater flows from homes by gravity and is pumped up to the treatment plant from underground.

## 2. Screening

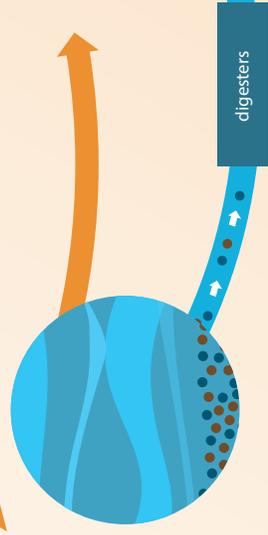
Debris and trash are removed from the wastewater.

## 3. Grit Removal

Small debris, like sand and gravel, is removed by gravity.

## 4. Gravity Settling

Suspended solids settle to the bottom by gravity and oil and grease rise to the top.



Settled solids travel through digesters which produce natural gas and biosolids that are recycled as fertilizer.

**471,000,000**

Gallons of wastewater/stormwater Philadelphia processes a day

FINISH

## 8. Effluent Discharge

The treated water is returned to the river.

## 7. Disinfection

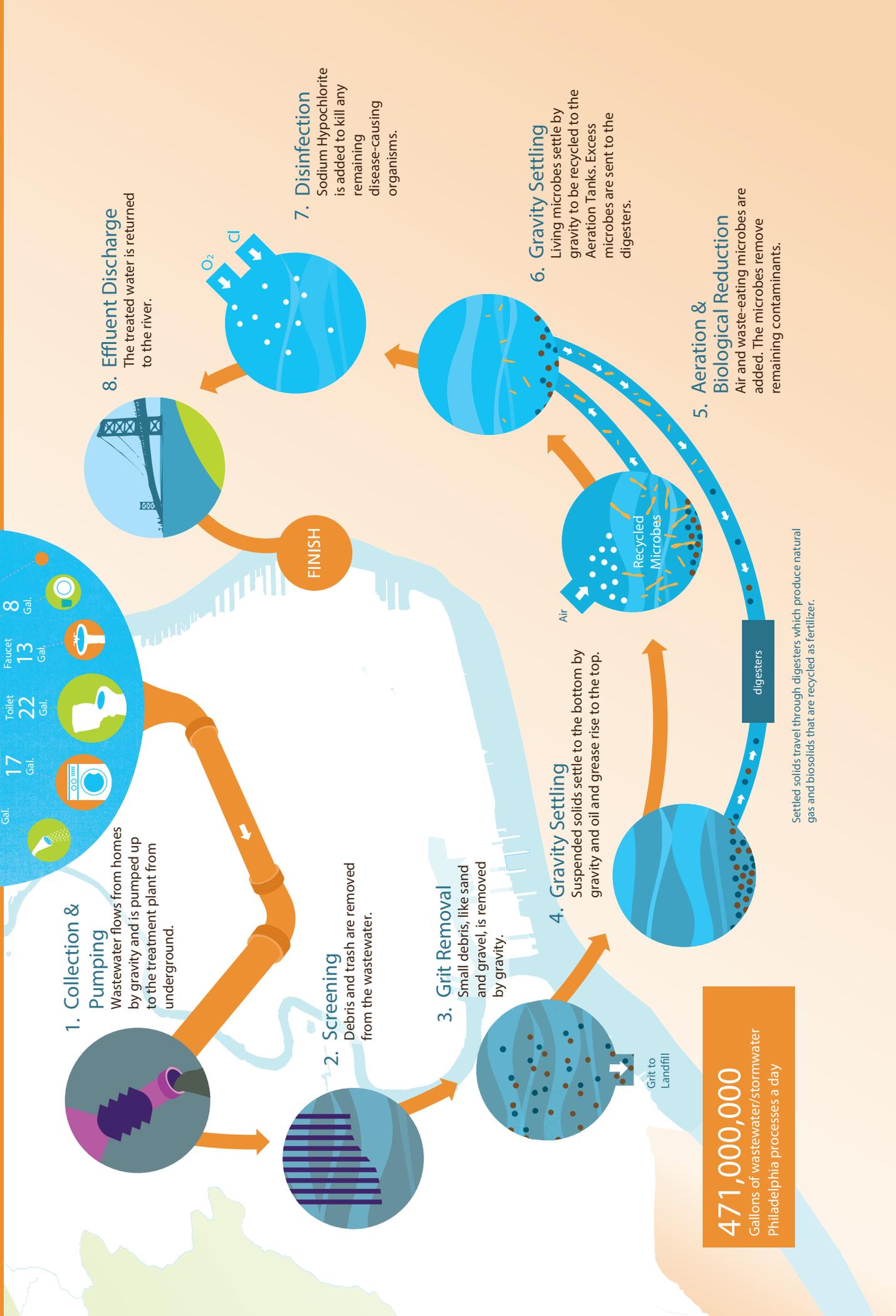
Sodium Hypochlorite is added to kill any remaining disease-causing organisms.

## 6. Gravity Settling

Living microbes settle by gravity to be recycled to the Aeration Tanks. Excess microbes are sent to the digesters.

## 5. Aeration & Biological Reduction

Air and waste-eating microbes are added. The microbes remove remaining contaminants.



## PARTNERSHIP FOR SAFE WATER



### Why is chlorine used to disinfect the drinking water?

State and Federal laws require the disinfection of all public water supplies. EPA and health agencies recognize that using chlorine is the most effective way to protect public health from disease-causing organisms that can be found in rivers and streams. However, chlorine can chemically react with natural materials in rivers to form disinfection byproducts, such as trihalomethanes and haloacetic acids. We have been adjusting our treatment process over the years to reduce this chemical reaction. But we also ensure that the treated water that is distributed through the City's water mains to your homes has a "chlorine residual." This residual continues to protect your water against bacteria and other organisms on its journey to your home's tap. We use sodium hypochlorite, a safer form of chlorine similar to household bleach, to disinfect the water at our treatment plants.

**Philadelphia Water consistently produces high quality drinking water, achieving Partnership for Safe Water (Partnership) quality standards that are stricter than State and Federal water quality regulatory requirements.** PWD voluntarily adopted these goals, as a member of the Partnership for Safe Water\* in 1996. The average turbidity level (measure of water clarity) of PWD drinking water has been at or below 0.06 nephelometric turbidity units (NTU) since 1998.

**The turbidity of Philadelphia's water in 2014 was 85 percent below the maximum level of 0.3 NTU allowed by the State and Federal Regulations and was more than 50 percent below the Partnership for Safe Water turbidity goal of 0.10 NTU.**

In 2008, the Baxter, Queen Lane and Belmont Water Treatment Plants were honored by USEPA and PaDEP with the Partnership for Safe Water 10-Year Director's Award in recognition of PWD's decade-long commitment to achieving and maintaining the highest possible drinking water quality.

August 8, 2013 marked the fifteenth year of Partnership for Safe Water Phase 3 Status for PWD drinking water plants. Philadelphia is committed to participation in this ongoing program, to optimize treatment processes, operating and maintenance procedures and management practices to enhance and maintain our water system's ability to remove *Cryptosporidium*, *Giardia* and other microbial contaminants and ensure high quality drinking water.

Philadelphia Water extended its participation in the Partnership for Safe Water initiative by becoming a charter member in the new Distribution System Optimization Program. This self-assessment initiative extends our focus from the treatment process to ensuring delivery of high quality water by maintaining distribution system integrity.

*\*The Partnership for Safe Water is a voluntary optimization program conceived and initiated by the U.S. Environmental Protection Agency (USEPA), the American Water Works Association, the Association of Metropolitan Water Agencies and advocated by the Pennsylvania Department of Environmental Protection (PaDEP). Pennsylvania leads the nation in participation in this program and Philadelphia Water is one of Pennsylvania's leaders.*

## LEAD IN DRINKING WATER

**It is important to minimize the intake of lead from dust inhalation, food and water.**

Children are particularly susceptible to the health effects of lead poisoning. Lead is most commonly found in dust, paint and contaminated soil. To a lesser extent, lead can also occur in tap water. When detected in tap water, it usually comes from older home plumbing or lead service pipes. When disturbed, such as for a repair, these lines can contribute to lead in tap water. It is the homeowner's responsibility to maintain, repair and replace the service lines.

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 material and components associated with service lines and home plumbing. Philadelphia Water 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 and 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 or at: [www.epa.gov/safewater/lead](http://www.epa.gov/safewater/lead).

Our primary role in helping you minimize your intake of lead is to reduce the corrosive effects of tap water on materials that contain lead. Water is corrosive and encourages the dissolving of lead from these materials. Philadelphia Water has a permit with the Pennsylvania Department of Environmental Protection (PA DEP) for operating under optimized corrosion control to minimize lead leaching from plumbing materials.

Currently, every three years, Philadelphia Water tests tap water for lead at more than 50 representative taps of homes in the City which have lead plumbing components. We do this according to the requirement of the EPA's Lead and Copper Rule. The testing results are used to determine if our corrosion control treatment technique is working, so that water has minimum potential for lead to leach from plumbing materials. So far, our test results show that our treatment techniques keep lead levels to a minimum. For the 2014 test results, please see the chart on page 14.

These test results could change in any year, however, because Philadelphia is required to meet other regulations for tap water quality. Sometimes these water quality changes can affect the corrosion potential of the water. If such a change were to occur, Philadelphia Water would notify its customers of the change while it works to minimize corrosion conditions again. Water utilities all over the country are in the same position as Philadelphia, trying to balance all of the regulatory requirements and changes at one time so that their customers receive the best quality water possible. We are committed to reducing the corrosive effects of plumbing and lead levels in water. Additional information is available from the EPA's Safe Drinking Water Hotline at 800-426-4791 or from their website at <http://water.epa.gov/drinking/info/lead>.



## RESEARCH AND MONITORING



### PHARMACEUTICALS AND SOURCE WATER

Pharmaceuticals get into drinking water because people use both prescription and over-the-counter medications. Only a portion of these substances is absorbed into the bloodstream. The rest is excreted by the body, making its way through wastewater treatment plants and back into the waterways that serve as our drinking water sources.

You can help keep unused pharmaceuticals out of the water supply by paying attention to how you dispose of unused medications. Look for take-back programs that may be established near you. The Drug Enforcement Agency (DEA) sponsors national take-back programs in coordination with State and local law enforcement agencies. The national take-back program provides opportunities for the public to surrender expired, unwanted or unused pharmaceuticals and other medications to law enforcement officers for proper disposal. To find out about future take-back events, visit DEA's website at [www.deadiversion.usdoj.gov/drug\\_disposal/takeback/](http://www.deadiversion.usdoj.gov/drug_disposal/takeback/).

## Properly Dispose of your Medications at Home!



### 1. Protect Your Info

Peel off the label, or cross out all your personal information with a marker.

### 2. Seal the Meds

Put the pills or liquids in another container, then cover with items like coffee grounds or kitty litter.

### 3. Trash It!

Toss sealed meds in your household trash.

To learn more about pharmaceuticals and drinking water, view the short instructional video developed by Philadelphia Water and the Philadelphia chapter of Physicians for Social Responsibility: [www.vimeo.com/78005190](http://www.vimeo.com/78005190)

## FLUORIDE REDUCTION

**Fluoridation has been successfully practiced in the United States since the mid 1900s.** Philadelphia Water began adding fluoride to the water supply system as a service to the Philadelphia Department of Public Health and in compliance with the Philadelphia Health Code established in 1951 at a concentration of 1.0 ppm. In January 2012, the amount of fluoride added to the water was decreased in cooperation with the Philadelphia Department of Public Health and the Pennsylvania Department of Environmental Protection so that customers now receive water containing 0.7 ppm, as per new recommendations from the U.S. Public Health Service.

In 1999, the U.S. Centers for Disease Control (CDC) declared that the fluoridation of drinking water is considered to be one of the ten greatest achievements in public health in the 20<sup>th</sup> century. The CDC estimates that in most cities, every \$1 invested in water fluoridation yields an approximate \$38 in savings on dental treatment costs as a result of a 40 to 65 percent reduction in tooth decay.



## CRYPTOSPORIDIUM AND GIARDIA

***Cryptosporidium* and *Giardia* are microscopic organisms found in rivers and lakes throughout the United States.** If ingested, *Cryptosporidium* and *Giardia* can cause diarrhea and abdominal cramps. However, these are also symptoms of intestinal diseases caused by many bacteria, viruses and parasites. Most healthy individuals can overcome such illnesses within a few weeks; however, immuno-compromised individuals are at a greater risk of developing a life-threatening illness and are encouraged to consult with their doctors about taking appropriate precautions to avoid infections.

PWD carefully monitors water treatment processes and works closely with the Philadelphia Department of Public Health to ensure that our tap water is free of pathogens that can be found in rivers. The Department of Public Health monitors local hospital records in real time for symptoms consistent with waterborne illnesses and would contact Philadelphia Water if there were any concerns that the drinking water may be contributing to illnesses.

Philadelphia Water is one of the nation's leaders in *Cryptosporidium* research and was one of the first utilities in the U.S. to monitor for the organism. Philadelphia Water's Office of Watersheds manages a source water protection program that looks at protecting the rivers in the City as well as farther upstream of Philadelphia. PWD continues source water *Cryptosporidium* research, in collaboration with Lehigh University. By identifying sources of *Cryptosporidium* in the watershed, PWD is taking a proactive approach in improving our rivers' water quality.

**Philadelphia Water is taking a proactive approach in improving the rivers' water quality.**

## WHAT DO WE LOOK FOR?

**Public Drinking Water Systems monitor their treated drinking water for approximately 100 regulated contaminants.** These regulatory parameters are defined within Federal rules such as the Total Coliform Rule, Surface Water Treatment Rule, Disinfectants and Disinfection Byproducts Rules, Lead and Copper Rule and the Radionuclides Rule. We monitor for the regulated parameters listed below. Tables on pages 14-17 summarize monitoring results for parameters found at detectable levels.

### Inorganic Chemicals:

Antimony, Arsenic, Asbestos, Barium, Beryllium, Cadmium, Chromium, Cyanide Free, Fluoride, Mercury, Nickel, Selenium, Thallium

### Synthetic Organic Chemicals:

Alachlor, Atrazine, Benzopyrene, Carbofuran, Chlordane, Dalapon, Di(ethylhexyl)adipate, Di(ethylhexyl)phthalate, Dibromochloropropane, Endothall, Ethylene Dibromide, Hexachlorocyclopentadiene, Lindane, Methoxychlor, Oxamyl, PCBs Total, Pentachlorophenol, Picloram, Simazine

### Volatile Organic Chemicals:

Benzene, Carbon Tetrachloride, 1,2-Dichloroethane, o-Dichlorobenzene, p-Dichlorobenzene, 1,1-Dichloroethylene, cis-1,2-Dichloroethylene, trans-1,2-Dichloroethylene, Dichloromethane, 1,2-Dichloropropane, Ethylbenzene, Monochlorobenzene, Styrene, Tetrachloroethylene, Toluene, 1,2,4-Trichlorobenzene, 1,1,1-Trichloroethane, 1,1,2-Trichloroethane, Trichloroethylene, o-Xylene, m,p-Xylenes

### Appealing to Your Senses

We also test for aluminum, chloride, color, iron, manganese, odor, pH, silver, sulfate, surfactants, total dissolved solids and zinc to ensure that your water meets all water quality taste and odor guidelines. This is so that your water looks, tastes and smells the way it should.

### Temperature and Cloudiness

The temperature of the Schuylkill and Delaware Rivers varies seasonally from approximately 32 degrees to 81 degrees Fahrenheit. Philadelphia Water does not treat the water for temperature. Cloudiness in tap water most commonly happens in the winter, when the cold water from the water main is warmed up quickly in household plumbing. Cold water and water under pressure can hold more air than warmer water and water open to the atmosphere. When really cold winter water comes out of your tap, it's simultaneously warming up and being relieved of the pressure it was under inside the water main and your plumbing. The milky white color is actually just tiny air bubbles. If you allow the glass to sit undisturbed for a few minutes, you will see it clear up gradually.

Parameters listed below are not part of EPA's requirements and are provided for information purposes.

SODIUM IN TAP WATER			
	Baxter WTP One Year Average	Belmont WTP One Year Average	Queen Lane WTP One Year Average
Average (ppm)	24 ppm	46 ppm	42 ppm
Average (mg in 8 oz. glass of water)	6 mg	11 mg	10 mg
Range (ppm)	19 - 40 ppm	33 - 66 ppm	28 - 65 ppm
Range (mg in 8 oz. glass of water)	4 - 9 mg	8 - 16 mg	7 - 15 mg

HARDNESS IN TAP WATER			
	Baxter WTP One Year Average	Belmont WTP One Year Average	Queen Lane WTP One Year Average
Average	97 ppm or 6 gpg	139 ppm or 8 gpg	164 ppm or 10 gpg
Minimum	76 ppm or 4 gpg	98 ppm or 6 gpg	111 ppm or 6 gpg
Maximum	113 ppm or 7 gpg	189 ppm or 11 gpg	213 ppm or 12 gpg

Hardness defines the quantity of minerals, such as calcium and magnesium, in water. These minerals react with soap to form insoluble precipitates and can affect common household chores such as cooking and washing. Philadelphia's water is considered "medium" hard.

ALKALINITY IN TAP WATER			
	Baxter WTP One Year Average	Belmont WTP One Year Average	Queen Lane WTP One Year Average
Average	40 ppm	68 ppm	71 ppm
Minimum	26 ppm	44 ppm	43 ppm
Maximum	52 ppm	96 ppm	92 ppm

## GLOSSARY

Some of the words we use in the following charts may not be familiar to you. Here are definitions of technical and other terms.

**Action Level:** The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow. The action level is not based on one sample; instead, it is based on many samples.

**Alkalinity:** A measure of the water's ability to resist changes in the pH level and a good indicator of overall water quality. Although there is no health risk from alkalinity, we monitor it to check our treatment processes.

**E. coli (Escherichia coli):** A type of coliform bacteria that is associated with human and animal fecal waste.

**gpg (grains per gallon):** A unit of water hardness. One grain per gallon is equal to 17.1 parts per million.

**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.

**mg/L (Milligrams per liter):** One milligram per liter is equal to one part per million.

**MRDL (Maximum Residual Disinfection Level):** The highest level of disinfectant that is allowed in drinking water. The addition of a disinfectant is necessary for the control of microbial contaminants.

**MRDLG (Maximum Residual Disinfection Level Goal):** The level of a disinfectant in drinking water 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.

**Minimum Residual Disinfectant Level:** The minimum level of residual disinfectant required at the entry point to the distribution system.

**NTU (nephelometric turbidity units):** Turbidity is measured with an instrument called a nephelometer. Measurements are given in nephelometric turbidity units.

**Pathogens:** Bacteria, virus, or other microorganisms that can cause disease.

**pCi/L (Picocuries per liter):** A measure of radioactivity.

**ppm (parts per million):** Denotes 1 part per 1,000,000 parts, which is equivalent to two thirds of a gallon in an Olympic-sized swimming pool.

**ppb (parts per billion):** Denotes 1 part per 1,000,000,000 parts, which is equivalent to half a teaspoon in an Olympic-sized swimming pool.

**µg/L (Microgram per liter):** One microgram per liter is equal to one part per billion.

**ppt (parts per trillion):** Denotes 1 part per 1,000,000,000,000 parts, which is equivalent to one drop in 20 Olympic-sized swimming pools.

**SOC (Synthetic Organic Chemical):** Commercially made organic compounds, such as pesticides and herbicides.

**Total Coliform:** Coliforms are bacteria that are naturally present in the environment. Their presence in drinking water may indicate that other potentially harmful bacteria are also present.

**THAAs (Total Haloacetic Acids):** A group of chemicals known as disinfection byproducts. These form when a disinfectant reacts with naturally occurring organic and inorganic matter in the water.

**TOC (Total Organic Carbon):** A measure of the carbon content of organic matter. This measure is used to indicate the amount of organic material in the water that could potentially react with a disinfectant to form disinfection byproducts.

**TTHMs (Total Trihalomethanes):** A group of chemicals known as disinfection byproducts. These form when a disinfectant reacts with naturally occurring organic and inorganic matter in the water.

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

**Turbidity:** A measure of the clarity of water related to its particle content. Turbidity serves as an indicator for the effectiveness of the water treatment process. Low turbidity measurements, such as ours, show the significant removal of particles that are much smaller than can be seen by the naked eye.

**VOC (Volatile Organic Chemicals):** Organic chemicals that can be either man-made or naturally occurring. These include gases and volatile liquids.

**WTP:** Water Treatment Plant

## 2014 DRINKING WATER QUALITY RESULTS

Listed on pages 14-17 are our Drinking Water Quality Results for 2014. All results are better than the recommended Federal levels designed to protect public health. By reporting these results in the tables below, we are meeting a requirement of the EPA. Please see the glossary on page 13 for definitions of abbreviations used in the tables. Some contaminants may pose a health risk at certain levels. Others, such as turbidity, are used as indicators for treatment plant performance. For information about potential risks, please visit our website [www.phila.gov/water](http://www.phila.gov/water), or call us at 215-685-6300. We will be happy to mail them to you.

### LEAD AND COPPER - Tested at Customers' Taps - Testing is done every 3 years.

Most recent tests were done in 2014.

	EPA's Action Level - for a representative sampling of customer homes	Ideal Goal (EPA's MCLG)	90% of PWD customers' homes were less than	Number of homes considered to have elevated levels	Violation	Source
Lead	90% of homes must test less than 15 ppb	0 ppb	5.0 ppb	7 out of 134	No	Corrosion of household plumbing; Erosion of natural deposits
Copper	90% of homes must test less than 1.3 ppm	1.3 ppm	0.31 ppm	0 out of 134	No	Corrosion of household plumbing; Erosion of natural deposits; Leaching from wood preservatives

### MICROORGANISMS - Tested throughout the Distribution System. Over 380 samples collected throughout the City every month.

	Highest Level Allowed (EPA's MCL)	Ideal Goal (EPA's MCLG)	Highest Monthly % or Yearly Total of Positive Samples	Monthly Range (% or #)	Violation	Source
Total Coliform	5% of monthly samples are positive*	0	0.54%	0 - 0.54%	No	Naturally present in the environment
Fecal Coliform or E.coli		0	0	0	No	Human or animal fecal waste

\*Every sample that is positive for total coliforms must also be analyzed for either fecal coliforms or *E. coli*. If a system has two consecutive total coliform positive samples, and one is also positive for *E. coli*, then the system has an acute MCL violation.

**TOTAL CHLORINE RESIDUAL - Continuously Monitored at Water Treatment Plants.**

Sample Location	Minimum Disinfectant Residual Level Allowed	Lowest Level Detected	Yearly Range	Violation	Source
Baxter WTP	0.2 ppm	1.68 ppm	1.68 - 3.55 ppm	No	Water additive used to control microbes
Belmont WTP		1.52 ppm	1.52 - 2.99 ppm		
Queen Lane WTP		1.26 ppm	1.26 - 3.15 ppm		

**TOTAL CHLORINE RESIDUAL - Tested throughout the Distribution System. Over 450 samples collected throughout the City every month.**

Sample Location	Maximum Disinfectant Residual Level Allowed	Highest Monthly Average	Monthly Average Range	Violation	Source
Distribution System	4.0 ppm	2.08 ppm	1.43 - 2.08 ppm	No	Water additive used to control microbes

**INORGANIC CHEMICALS (IOC) – PWD monitors for IOC more often than required by EPA.**

Chemical	Highest Level Allowed (EPA's MCL)	Ideal Goal (EPA's MCLG)	Highest Result	Range of Test Results for the Year	Violation	Source
Barium	2 ppm	2 ppm	0.051 ppm	0.027 - 0.051 ppm	No	Discharges of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Chromium	100 ppb	100 ppb	2 ppb	0 - 2 ppb	No	Discharge from steel and pulp mills; Erosion of natural deposits
Fluoride	2 ppm*	2 ppm*	0.71 ppm	0.68 - 0.71 ppm	No	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories
Nitrate	10 ppm	10 ppm	4.41 ppm	0.71 - 4.41 ppm	No	Runoff from fertilizer use; Leaching from septic tanks; Erosion of natural deposits

\*EPA's MCL and MCLG is 4 ppm, but PADEP has set this lower MCL and MCLG which takes precedence.

## 2014 DRINKING WATER QUALITY RESULTS

RADIOLOGICAL CONTAMINANTS						
	EPA's MCL	EPA's MCLG	Highest Result	Yearly Range	Violation	Source
Alpha Emitters	15 pCi/L	0 pCi/L	0 pCi/L	0 - 0 pCi/L	No	Erosion of natural deposits
Beta Emitters	50 pCi/L*	0 pCi/L	17.5 pCi/L	0.84 - 17.5 pCi/L	No	Decay of natural and man-made deposits
Combined Radium 226 & 228	5 pCi/L	0 pCi/L	0 pCi/L	0 - 0.0 pCi/L	No	Erosion of natural deposits
Combined Uranium	30 µg/L	0 µg/L	0 µg/L	0 - 0 µg/L	No	Erosion of natural deposits

NOTE: The state allows us to monitor for some contaminants less than once per year because the concentration for these contaminants does not change frequently. Required monitoring was conducted in 2014 except for Beta Emitters which was conducted in 2011.

\*The MCL for beta particles is 4 mrems/year. EPA considers 50 pCi/L to be the level of concern for beta particles.

TOTAL ORGANIC CARBON (TOC) - Tested at Water Treatment Plants					
Treatment Technique Requirement	Belmont WTP One Year Range	Belmont WTP One Year Range	Queen Lane WTP One Year Range	Violation	Source
Percent of Removal Required	25 - 45%	25 - 35%	25 - 45%	n/a	Naturally present in the environment.
Percent of Removal Achieved	34 - 66%	27 - 56%	24 - 71%	No	
Number of Quarters out of Compliance	0	0	0		

PWD achieved TOC removal requirements in all quarters of 2014 at all WTPs. Compliance is based on a running annual average computed quarterly.

TURBIDITY - A MEASURE OF CLARITY - Tested at Water Treatment Plants					
	Baxter WTP	Belmont WTP	Queen Lane WTP	Violation	Source
<b>Treatment Technique Requirement:</b> 95% of samples must be at or below 0.300 NTU	100% below 0.300 NTU	100% below 0.300 NTU	100% below 0.300 NTU	n/a	Soil runoff, river sediment
Highest single value for the year	0.120 NTU	0.089 NTU	0.070 NTU	No	

We are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not your drinking water meets health standards. PWD continuously operates and monitors water quality from a total of 160 filters at three drinking water treatment plants. In calendar year 2014, on one occasion, continuous on-line turbidity monitoring was interrupted on one of our filters and therefore we cannot be sure of the quality of the drinking water from this filter during the interruption. On 5/27/2014, Filter #27 at the Queen Lane Plant was found in service without turbidity monitoring for a period of 39 hours and 47 minutes. The monitoring interruption occurred as a result of a turbidimeter sensor failure. During the period of time the filter remained in service without turbidity monitoring, the combination flow from the filters at the Queen Lane Plant was continuously sampled and monitored with no change in turbidity levels or on-line particle counter. No water quality emergency occurred due to the monitoring interruption, and this notice is for informational purposes only.

**DISINFECTION BY-PRODUCTS**

	Highest Level Allowed (EPA's MCL) - One Year Average	Running Annual Average 2014*	System Wide Range of Results	Violation	Source
Total Trihalomethanes (TTHMs)	80 ppb	53 ppb	11 - 77 ppb	No	By-product of drinking water disinfection
Total Haloacetic Acids (THAAs)	60 ppb	40 ppb	14 - 66 ppb	No	By-product of drinking water disinfection

\*Monitoring is conducted at 16 locations throughout the City of Philadelphia. This result is the highest locational running annual average in 2014.

**UNREGULATED CONTAMINANT MONITORING**

Chemical	Testing Period	Average	Range
1, 4 dioxane	2/4/14	0.10 ppb	0 - 0.16 ppb
4-androstene-3,17-dione	1/31/14 - 4/1/14	0.23 ppt	0 - 0.36 ppt
17-a-ethynylestradiol	1/31/14 - 4/1/14	0.4 ppt	0 - 1.2 ppt
Chlorate	2/4/14	178.33 ppb	160 - 190 ppb
Chromium VI	2/4/14	0.34 ppb	0.30 - 0.42 ppb
Strontium	2/4/14	151.33 ppb	88 - 200 ppb

In 2014, PWD performed special monitoring as part of the Unregulated Contaminant Monitoring Rule (UCMR), a nationwide monitoring effort conducted by the EPA. Unregulated contaminants are those that do not yet have a drinking water standard set by EPA. The purpose of monitoring for these contaminants is to help EPA decide whether the contaminants should have a standard. For more information concerning UCMR, visit these websites: <http://water.epa.gov/lawsregs/rulesregs/sdwa/ucmr/index.cfm> or [www.drinktap.org/home/water-information/water-quality/ucmr3.aspx](http://www.drinktap.org/home/water-information/water-quality/ucmr3.aspx)

**UNREGULATED CONTAMINANTS NOT DETECTED AT ANY OF THE SAMPLING LOCATIONS:**

bromochloromethane (Halon 1011), bromomethane, 1,3-butadiene, chlorodifluoromethane (HCFC -22), chloromethane, 1,1-dichloroethane, 1,2,3-trichloropropane, cobalt, molybdenum, vanadium, perfluorobutane sulfonic acid (PFBS), perfluoroheptanoic acid (PFHpA), perfluorohexane sulfonic acid (PFHxS), perfluorononanoic acid (PFNA), perfluorooctane sulfonic acid (PFOS), perfluorooctanoic acid (PFOA), equilin, 17-B-estradiol, estriol, estrone, testosterone



## EXPLORE WATER IN OUR WORLD AT THE FAIRMOUNT WATER WORKS!

### EDUCATION

School & Summer Programs - Students (pre-k through college) learn about water through themed, hands-on lessons through field-trip experiences at FWW. Programs include a general exploration of water, the history of water delivery, watershed management and stewardship of water resources. FWW offers field trips for summer camps and recreation center groups, and residency programs are welcome to explore the watershed through science, art, literature, and history.

#### **Middle-years Teacher Fellowship Program**

A grant of \$506,000 from the William Penn Foundation enabled FWW to launch a three-year program to develop a curriculum that integrates urban watershed education with core science and English standards for public school students in grades 6-8. FWW's *Understanding the Urban Watershed Curriculum Guide* serves as the framework, which will reach more than 1,500 students in the first three years.

### CELEBRATING 200 YEARS OF INGENUITY, INNOVATION & BEAUTY IN 2015

Fairmount Water Works has established partnerships with various environmental, educational, civic, and cultural organizations in an effort to celebrate our bicentennial in a truly unique way:

- **Art on the Circuit** – A sculpture will be developed and situated on the Schuylkill River Trail, and will connect outdoor enthusiasts with information about urban watersheds and promote sharing of the information through online platforms.
- **Culture & Conversation** – Each quarter, FWW welcomes the public to a reception highlighting an interpretive artwork inspired by environmental issues coupled with engaging conversation by an expert on a corresponding topic.
- **Turbine 2015** – FWW is the backdrop and inspiration for the premiere of *Turbine 2015*, which features choreography and music shaped in response to the site's unique architecture and landscape. More than 100 performance artists are a part of this collaboration of the Mendelssohn Club, Leah Stein Dance Company, and composer Byron Au Yong.
- **Invisible River Performance** – Venture to Rudolph Creek for an experience with Invisible River, a troupe that creates site-specific performances for rivers nationwide. The group advocates for the health of the Schuylkill River, our local watershed, and educates constituents on creating a more sustainable, swimmable, and drinkable river.
- **FLOW Festival** – An annual celebration of water featuring food, family-friendly exhibits, installations, and interactive activities with a glimpse into the future of our historic site.



With more than 520,000 visitors to date, the Fairmount Water Works (FWW) has become the destination for innovative water and watershed education programming in the region.

### PUBLIC TOURS

Fairmount Water Works offers tours that explore the past, present, and future impact of this national historic landmark. Well-known tours include: River Reimagined, Inside & Out, and Lunch & Learn (special program for seniors). FWW also offers tours on PWD's innovative green stormwater infrastructure, drinking water treatment plants, and the Fairmount Dam Fishway.

### FAMILY PROGRAMS

There's truly something for everyone. Science Saturdays, Mommies & Minnows, Fathers & Fry, and Sunday Cinema are all creative ways of exploring our water environment through fun hands-on activities and film.

Discover the wonders of water in our world. Call 215-685-0723 or visit [www.fairmountwaterworks.org](http://www.fairmountwaterworks.org) for the latest program listings, tours, and events.

## CLEAN WATER BEGINS AND ENDS WITH YOU

**Always recycle or dispose of unwanted household hazardous wastes properly.** Don't pour motor oil, antifreeze or other toxic materials down storm drains. Water that enters our storm drains often flows directly to our local streams and rivers. So, don't pollute! Recycle these household hazardous materials safely and help protect our waterways. Also, don't flush paint thinners, insect sprays, herbicides and other harmful chemicals down the toilet or put them down the sink. Contact the Streets Department to get a schedule of their Household Hazardous Materials Drop-off Events where you can dispose of these materials safely without polluting your drinking water supply.

### We welcome your ideas and opinions

We participate in nearly 200 public and community events a year, including presentations made at schools, on-going educational programs and other environmental celebrations. We offer ways for individuals, families, students, seniors, community groups and others to participate in learning about protecting water.

### Getting Involved

If you would like to help protect your water supply or watershed, please call Philadelphia Water at 215-685-6300, visit our website at [www.phila.gov/water](http://www.phila.gov/water), or see Table 2 on page 20.

### How to contact us

You can write to us at:  
 Philadelphia Water  
 Aramark Tower  
 1101 Market Street, 3rd Floor  
 Philadelphia, PA 19107-2994

You can call our Customer Information Hotline at 215-685-6300.

## Important Telephone Numbers & Web Addresses

### Philadelphia Water

215-685-6300  
[www.phila.gov/water](http://www.phila.gov/water)

### Water Revenue Bureau

215-686-6880  
[www.phila.gov/revenue](http://www.phila.gov/revenue)

### Delaware River & Schuylkill River Source Water Assessments

[www.phillywatersheds.org/what\\_were\\_doing/documents\\_and\\_data/watershed\\_plans\\_reports](http://www.phillywatersheds.org/what_were_doing/documents_and_data/watershed_plans_reports)

### Schuylkill Action Network

302-655-4990 ext.109  
[www.schuylkillwaters.org](http://www.schuylkillwaters.org)

### Philadelphia river and watershed information

[www.phillywatersheds.org](http://www.phillywatersheds.org)

### RiverCast

[www.phillyrivercast.org](http://www.phillyrivercast.org)

### Fairmount Water Works

215-685-0723  
[www.fairmountwaterworks.org](http://www.fairmountwaterworks.org)

### Philadelphia Streets Department

215-686-5560  
[www.philadelphiastreet.com](http://www.philadelphiastreet.com)

### U.S Environmental Protection Agency (Safe Drinking Water Hotline)

800-426-4791  
[www.water.epa.gov/drink/hotline/index.html](http://www.water.epa.gov/drink/hotline/index.html)

**TABLE 1: WHO TO CALL TO REPORT VARIOUS SITUATIONS**

Situation	Who To Call	Phone
Dead Fish	Fish & Boat Commission PADEP	717-626-0228 484-250-5900
Illegal Dumping & Related Pollution Activities	PADEP	484-250-5900
Sewage Spills	PADEP PWD	484-250-5900 215-685-6300
Oil & Gas Spills / Accidents	PADEP PWD	484-250-5900 215-685-6300

**TABLE 2: PLACES TO GO TO GET INVOLVED IN PROTECTING YOUR LOCAL STREAMS, RIVERS AND WATER SUPPLY**

Organization	Activity Types	Phone	Website
Friends of the Pennypack	A, C, E, P, T	215-934-PARK	<a href="http://www.friendsofpennypackpark.org">www.friendsofpennypackpark.org</a>
Friends of the Wissahickon	A, C, E, P, T	215-247-0417	<a href="http://www.fow.org">www.fow.org</a>
Friends of Fox Chase Farms	A, C, E, P	215-728-7900	<a href="http://www.foxchasefarm.org">www.foxchasefarm.org</a>
Friends of the Manayunk Canal	A, C, E, P, T	N/A	<a href="http://www.manayunkcanal.org">www.manayunkcanal.org</a>
Schuylkill Environmental Education Center	A, B, C, E, P, T	215-482-7300	<a href="http://www.schuylkillcenter.org">www.schuylkillcenter.org</a>
Partnership for the Delaware Estuary	A, B, C, E, P, S,T	1-800-445-4935	<a href="http://www.delawareestuary.org">www.delawareestuary.org</a>
Environmental Alliance for Senior Involvement	A, C, E, P, T	203-779-0024	<a href="http://www.easi.org">www.easi.org</a>
Philadelphia Canoe Club	R, F, T	215-487-9674	<a href="http://www.philacanoec.org">www.philacanoec.org</a>
Philadelphia Anglers Club	A, C, E, F	N/A	<a href="http://www.philadelphiaanglersclub.com">www.philadelphiaanglersclub.com</a>
Wissahickon Restoration Volunteers	A, C, E, P, T	215-951-0330 x2101	<a href="http://wissahickonrestorationvolunteers.org">http://wissahickonrestorationvolunteers.org</a>
Wissahickon Valley Watershed Association	A, C, E, P, T	215-646-8866	<a href="http://www.wvwa.org">www.wvwa.org</a>
Lower Merion Conservancy	A, C, E, P, T	610-645-9030	<a href="http://www.lmconservancy.org">www.lmconservancy.org</a>
Schuylkill Action Network	A, B, C, E, L, P, T	800-445-4935 x109	<a href="http://www.schuylkillwaters.org">www.schuylkillwaters.org</a>
Schuylkill Banks	B,E,L	215-222-6030	<a href="http://www.schuylkillbanks.org">www.schuylkillbanks.org</a>
Senior Environment Corps	A, C, E, P, T	215-848-7722	<a href="http://www.centerinthepark.org/prog-sec.html">www.centerinthepark.org/prog-sec.html</a>
Tookany/Tacony-Frankford (TTF) Watershed Partnership	A, C, E, P, T	215-844-8100	<a href="http://ttfwatershed.org">http://ttfwatershed.org</a>
U.S. Water Alliance	A, B, E	202-223-3677	<a href="http://www.uswateralliance.org">www.uswateralliance.org</a>



### ACTIVITY TYPES

- A:** Environmental activism
- B:** Business-related protection and educational activities
- C:** Clean-up of trash and litter
- E:** Environmental education
- F:** Fishing or fish recreation activities
- L:** Land conservation and management
- P:** Planting trees and streambank repair/protection
- R:** Rowing, canoeing and related boating activities
- S:** Storm drain marking
- T:** Water quality testing

## SCHUYLKILL & DELAWARE RIVER SOURCE WATER PROTECTION PLANS

The Schuylkill and Delaware River Source Water Protection Plans provide a comprehensive framework for implementing a watershed-wide effort to improve source water quality and quantity. The plans prioritize and outline several approaches to reduce sources of contamination to Philadelphia's raw water supply. PWD has made exceptional progress accomplishing these goals. PWD has prioritized land for permanent protection, established a regional partnership in the Schuylkill River Watershed and advocates for policies to protect and preserve our source waters and forested lands. PWD also collaborates with the Commonwealth of Pennsylvania to ensure regulations are enforced for wastewater treatment plants and industries that discharge upstream of Philadelphia.

Much progress has been made addressing potential threats to our water supply within Philadelphia's own boundaries. Educational campaigns promoting proper disposal of unused pharmaceuticals and outreach efforts to mark storm drains in the City that drain directly to surface waters demonstrate the relationship between river water quality and drinking water quality. On-the-ground projects like improved stream buffers in Fairmount Park and goose deterrent programs at local schools and parks reduce the amount of water quality constituents entering our local waterways.



The Source Water Protection Program conducts research to improve Philadelphia Water's knowledge of potential concerns to Philadelphia's water supplies. This research further defines our watershed protection priorities. Recent and on-going studies include analyses of flows needed to protect PWD's drinking water intakes on both the Schuylkill and the Delaware Rivers, evaluating upstream development policies and activities to ensure continued protection of our drinking water supply, and tracking of major sources of human infectious pathogens such as Cryptosporidium.

In 2014, PWD completed its second year of implementation of a 5-year Watershed Control Plan to reduce Cryptosporidium in the Schuylkill River watershed. The Watershed Control Plan helps ensure PWD compliance with the EPA's Long-Term 2 Enhanced Surface Water Treatment Rule at the Queen Lane Drinking Water Treatment Plant.

PWD has also made significant progress toward upgrading, expanding and improving upon the Delaware Valley Early Warning System (EWS), a mass communication network used to notify water suppliers and industrial users throughout the watershed of any spills or other water quality concerns via email and telephone. PWD continues to further enhance this system with advanced technological upgrades and improvements like a tidal spill modeling component that was a recipient of a 2015 Governor's Award for Environmental Excellence. PWD continues to work closely with the City's Office of Emergency Management and state and federal agencies to ensure that we are ready and able to respond to any water-related emergency event.

If you would like to receive a copy of the source water assessment summaries, or would like to know how to get involved in protecting your water supply or watershed, please call Philadelphia Water 215-685-6300, visit Table 2 on page 20 of this report, or go to: [www.phillywatersheds.org/what\\_were\\_doing/documents\\_and\\_data/watershed\\_plans\\_reports](http://www.phillywatersheds.org/what_were_doing/documents_and_data/watershed_plans_reports).



# Soak It Up

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# Adoption

## A Grant Opportunity for Your Local Civic Organization

**Soak It Up Adoption** is an innovative grant program from Philadelphia Water. Join us as we continue to work with communities across our city to help implement, maintain and share knowledge about Green Stormwater Infrastructure (GSI).

Soak It Up Adoption grants are available on an annual basis up to \$5,000. Adoptees assume responsibility for the care of one or more Green Stormwater Infrastructure sites. Responsibilities include helping to make sure that the site is litter free and that the surface of inlets and other components are free of leaves and other debris. Beyond helping with monitoring and aesthetic maintenance, participants are charged with helping PWD engage their community about their adopted infrastructure.

Green Stormwater Infrastructure is the centerpiece of Philadelphia's *Green City, Clean Waters* program, but what exactly is it? Green means that we use plants, trees and stone to filter and manage rain water more effectively. These tools are unique because they are very efficient and cost effective. Unlike traditional stormwater systems, they can be installed in numerous communities throughout the city. PWD uses a number of different types of GSI. Examples include: rain gardens, stormwater planters, stormwater bumpouts, stormwater tree trenches, and porous pavers.

Every day, thousands of Philadelphians interact with Green Stormwater Infrastructure. However, like many public projects, it's not always easy to see the impact it has on our communities. Green infrastructure often looks like what we're used to seeing – typical street trees, gardens and sidewalks. As adoption partners, you play a key role in uncovering that green for your friends, family, and neighbors to enjoy.

Soak It Up Adoption provides grants to civic groups to help maintain the beauty and functionality of Green Stormwater Infrastructure. Learn more at: [www.phillywatersheds.org/adoption](http://www.phillywatersheds.org/adoption)



1. Check if your organization is eligible to participate. Please review the application requirements to determine if your civic organization is eligible to join the program.
2. Complete the program application. Complete the on-line application form or download a PDF version of the form.
3. Learn more about Green Infrastructure. Can you spot the GSI in your neighborhood? Our website has lots of information about stormwater management in Philadelphia.
4. Maintain your GSI sites and complete the reporting form. You'll be able to find your neighborhood specific reporting form and resources.

Learn more about Philly's Green City, Clean Waters program at [www.phillywatersheds.org](http://www.phillywatersheds.org).



**Philadelphia Water**

1101 Market Street  
Philadelphia, PA 19107  
215.685.6300  
[phila.gov/water](http://phila.gov/water)  
[twitter.com/phillyh2O](https://twitter.com/phillyh2O)  
[facebook.com/phillyh2o](https://facebook.com/phillyh2o)