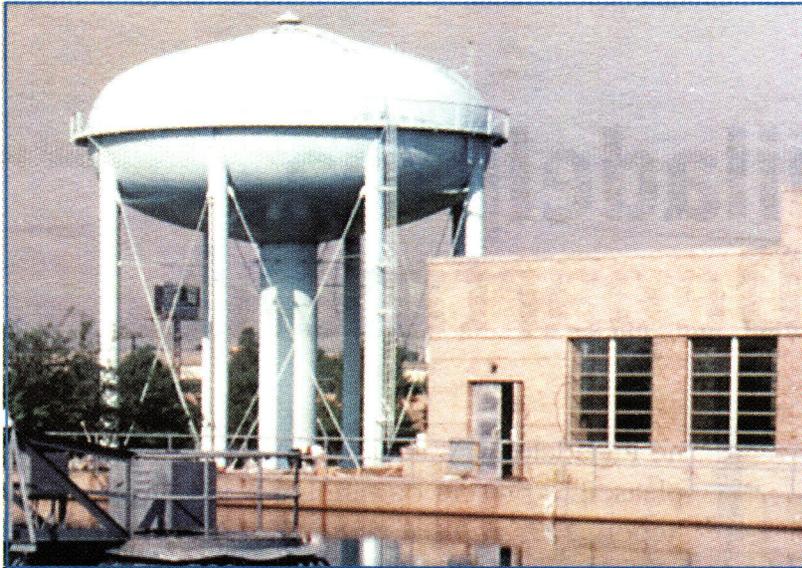


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# annual Drinking Water Quality Report

This report is being mailed to 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.**

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

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*PWD is an active and proud member of:*

- American Water Resources Association
- American Water Works Association
- American Water Works Association Research Foundation
- Partnership for Safe Water
- American Public Works Association
- Association of Metropolitan Water Agencies
- Association of Metropolitan Sewerage Agencies
- Water Environment Federation
- Water Environment Research Foundation

**PWD's Public Water System Identification #PA1510001**

**This report is available online at <http://www.phila.gov/water>**



# The Philadelphia Water Department



## People With Special Health Concerns

**S**ome 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.

Environmental Protection Agency/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.

**T**he Philadelphia Water Department (PWD) is pleased to present our annual Water Quality Report. *This report, published in April 2005, includes water quality information for the 2004 calendar year.*

The good news is – your tap water is top quality. Our Water Quality Report provides our customers with a summary of where Philadelphia's drinking water comes from, how it is treated and the results of water quality monitoring performed by us on a daily basis.

The U.S. Environmental Protection Agency (EPA) requires all water utilities to produce and distribute water quality reports on an annual basis.

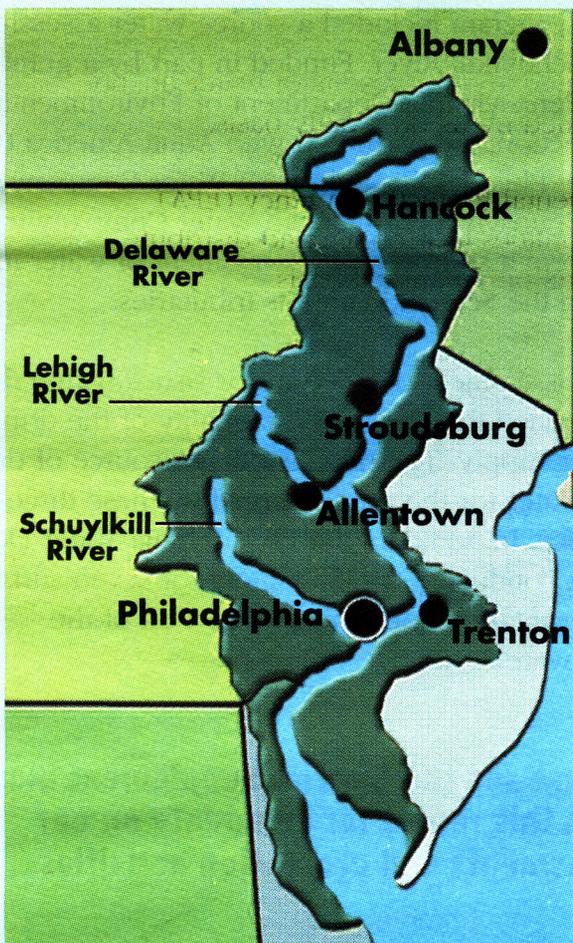
We have consistently performed better than all drinking water standards developed by the EPA to protect public health.

How do we do this? We use proven treatment practices at our water treatment plants and we participate in groundbreaking research while keeping water rates among the lowest in the region.

**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.**

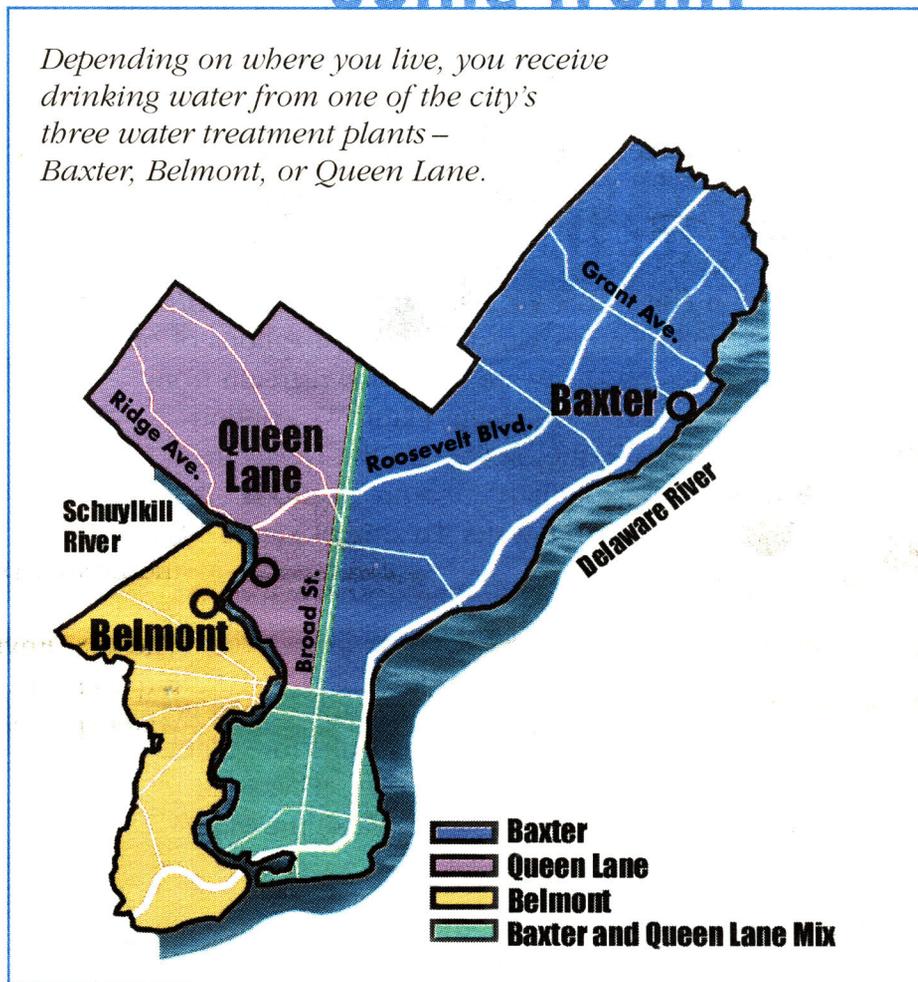
## Delaware River Watershed

*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.*



## Where does Philadelphia's drinking water come from?

*Depending on where you live, you receive drinking water from one of the city's three water treatment plants – Baxter, Belmont, or Queen Lane.*



**T**he water that 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 270 million gallons of high-quality drinking water for our customers on a daily basis.

PWD has three water treatment plants that process untreated river water. 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 West River 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.

**A**t their sources, the Delaware and Schuylkill Rivers are generally clean rivers. But as the rivers flow downstream, they pick up contaminants from many sources – storm water 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.

## Prepared for the unexpected

**O**n November 26, 2004, the oil tanker *Athos I* spilled approximately 265,000 gallons of oil into the Delaware River downstream from our Baxter Water Treatment Plant. We continuously monitored the oil spill on the Delaware River as a precautionary measure to protect the intake of our Baxter Water Treatment Plant.

We also adjusted the drinking water treatment process, adding powdered activated carbon as a precautionary measure. Carbon absorbs oil compounds in the unlikely event that any would get through the intake. All sample results for volatile organic compounds were negative. It was not necessary to deploy a boom or close the Plant intake.

At the height of the spill, the Water Department's Industrial Waste Unit reported to the Coast Guard's Emergency Operation Center to ascertain the severity of the spill and provided details to the Baxter Plant. Industrial Waste inspectors also monitored the situation closely.

The Samuel S. Baxter Plant is the largest of Philadelphia's three water plants and processes approximately 180 million gallons of water a day. The Plant provides drinking water to 60 percent of the population of Philadelphia as well as portions of Lower Bucks County. Our other two plants were not affected as they withdraw water from the Schuylkill River.

While we hope an incident like this never happens, we do extensive planning and training in case it does. Our efforts were successful, thanks to the commitment and dedication of many professionals in the Philadelphia Water Department.

## How do we protect our water supplies from pollution?

**W**e carefully safeguard our urban water supply through a variety of practices and research projects designed to protect our rivers and watersheds. Currently, we are undertaking a comprehensive approach to safeguard the region's water environment. This includes integrating our "wet weather" programs – combined sewer overflows and storm water management – with a new drinking water source protection program. But we can't do this alone. We partner with many community, governmental, and other groups to protect our precious water resources.

We need to partner with these stakeholders throughout the watershed to achieve a sensible balance between cost and environmental benefit. One program included a source water assessment of the Schuylkill River. Funded in part by a grant from the Pennsylvania Department of Environmental Protection, we partnered with Aqua America (formerly Philadelphia Suburban Water Company) and the Pennsylvania American Water Company to perform a source water assessment of water intakes along the Schuylkill and its tributaries.

The assessment detailed major issues within the watershed that threaten the quality of the drinking water supply. The river is a major source of drinking water for the public served by these three water utilities. In addition, the Philadelphia Water Department conducted an assessment for seven surface water intakes along the tidal section of the Delaware River.

**Please see the Special Supplement included with this report for an update on our assessments and protection activities.**

For information about the quality of our region's rivers and streams, call the Pennsylvania Department of Environmental Protection at 484-250-5900 or check their website (<http://www.dep.state.pa.us>).

## How do we test the water to assure its high quality?

**W**e perform more than 350,000 tests annually at our three drinking water treatment plants to make sure the treatment processes are working as expected. In addition, our scientists, engineers and technicians analyze thousands of samples of tap water each year at our sophisticated testing laboratory. This water is collected from city reservoirs and from more than 65 locations throughout Philadelphia.

## How do drinking water sources become polluted?

**A**cross the nation, sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs and wells. As water (such as rain and melting snow) 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.

Contaminants that may be present in source water include:

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



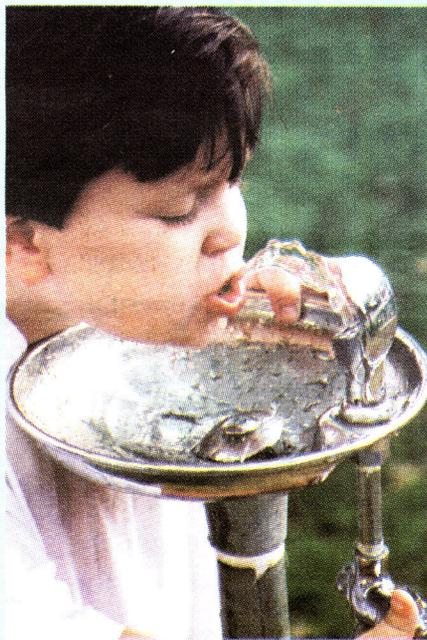
## Safeguarding the water you drink.

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

Drinking water, including bottled water, may reasonably be expected to contain at least small 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 Environmental Protection Agency's Safe Drinking Water Hotline (800-426-4791) or from their website (<http://www.epa.gov/safewater>).

## What do we look for?

In addition to the contaminants that appear in our charts, we look for over 100 other contaminants that were not found at reportable levels. These include: alachlor, arsenic, antimony, beryllium, cyanide, thallium, cadmium, mercury, silver, selenium, benzene, carbon tetrachloride, p-dichlorobenzene, 1,2-dichloroethane, trichloroethylene, 1,1,1-trichloroethane, 1,2,4-trichlorobenzene, 1,1,2-trichloroethane, toluene, total xylenes, chlorobenzene, o-dichlorobenzene, c-1,2-dichloroethylene, t-1,2-dichloroethylene, 1,2-dichloropropane, ethyl benzene, styrene, tetrachloroethylene, di(2-ethylhexyl)adipate, endothall, oxamyl, pichloram, benzo(a)pyrene, carbofuran, chlordane, dibromochloropropane, ethylene dibromide, methoxychlor, 1-1-dichloroethylene, di(2-ethylhexyl) phthalate, simazine, dichloromethane, pentachlorophenol, ethylene dibromide, hexachlorocyclopentadiene, and lindane.



### Taste and Odor

We also test for aluminum, chloride, color, iron, manganese, pH, sulfate, total dissolved solids, and zinc to ensure that tap water meets all water quality taste and odor guidelines.

### Waived Requirements

The Pennsylvania Department of Environmental Protection has waived requirements to test for the following elements as they are not expected to occur in

drinking water in this area (although we still test for these periodically): nitrite, asbestos, dalapon, dinoseb, dioxin, diquat, endrin, glyphosate, hexachlorobenzene, 2,4-D, PCBs, toxaphene, 2,4,5-TP, heptachlor, heptachlor epoxide and vinyl chloride. Radon is waived, as it is associated with groundwater. Radium is tested for only if other radiological elements exceed an action level.

### Nickel

There is currently no EPA legal limit for nickel. PWD monitors annually for unregulated metals, although we are only required to report every nine years. In 1974, under the Safe Drinking Water Act, the EPA established a limit of 0.1 ppm for nickel. The EPA remanded [put aside] this limit in February of 1995, and it is under review.

## How do we treat the water so you can drink it?

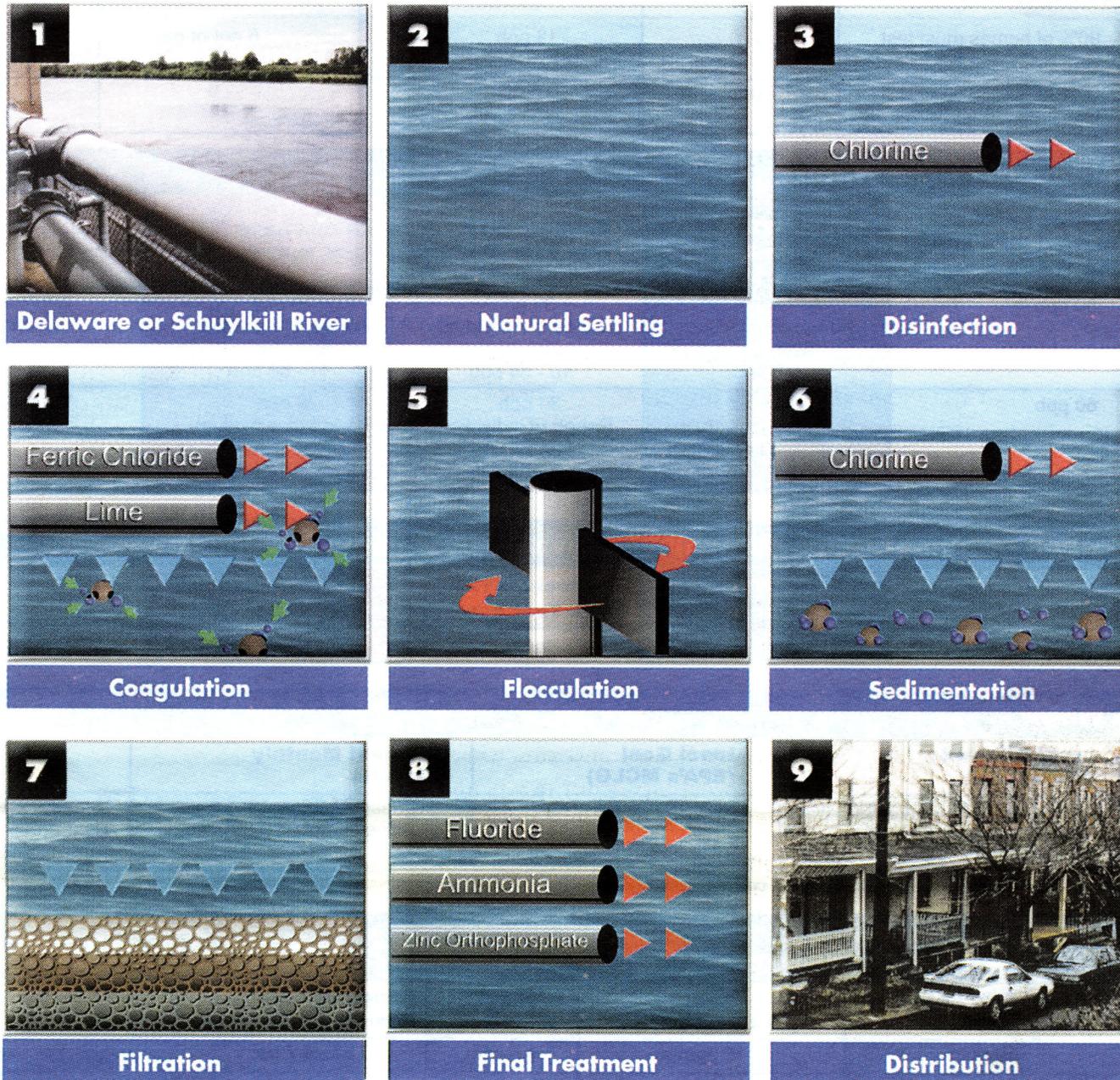
Like the majority of water utilities in the U.S., we use a multi-step treatment process at all three of our drinking water treatment plants. The Water Treatment Process diagram on page seven provides a brief description of drinking water treatment in Philadelphia.

## 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.

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 tap.

# drinking water treatment



## 1. The River

The source water comes from either the Delaware or Schuylkill River.

## 2. Natural Settling

Water is stored in reservoirs or basins after it has been pumped from the river to allow sediments to settle.

## 3. Disinfection

Chlorine is added to kill disease-causing organisms.

## 4. Coagulation

The river water is "coagulated." Chemicals are added to the water to cause smaller particles in water to join together. This makes them heavier so that they will settle to the bottom of the basin.

## 5. Flocculation

The water is mixed to make sure the added chemicals are well blended and react with all of the smaller particles. The particles combine to form "floc" which settle to the bottom of the basin.

## 6. Sedimentation

The newly joined particles or "floc" settle by gravity and are removed from the bottom of the mixing tanks.

## 7. Filtration

The water is pushed through filters, which remove finer particles still in the water for additional purification.

## 8. Final Treatment

Fluoride is added to help prevent tooth decay. Zinc orthophosphate is added to minimize corrosion activity between water and piping materials. Ammonia is added to reduce chlorine-like tastes and to help the chlorine to persist in the water while it travels through the water main system.

## 9. Distribution

The treated water is distributed through nearly 3,300 miles of water mains.

# 2004 Drinking Water Quality

## Metals - Tested at Customers' Taps - Testing is done every 3 years. Last tests were done in 2002.

	EPA's Action Level for representative sampling of customer homes	Ideal Goal (EPA's MCLG)	90% of PWD customers' homes were less than	No. of homes considered to have elevated levels	Source
<b>Lead</b>	90% of homes must test less than 15 ppb	0	13 ppb	6 out of 63	Corrosion of household plumbing
<b>Copper</b>	90% of homes must test less than 1.3 ppm	1.3 ppm	0.3 ppm	0	Corrosion of household plumbing

## Disinfection Byproducts in Tap Water

	Highest Level Allowed (EPA MCL) One Year Average	Baxter WTP One Year Average	Belmont WTP One Year Average	Queen Lane WTP One Year Average	Source
<b>Total Trihalomethanes (TTHMs)</b>	80 ppb	44 ppb Range of individual test results: 16 - 82 ppb	39 ppb Range of individual test results: 10 - 84 ppb	39 ppb Range of individual test results: 11 - 68 ppb	Byproduct of drinking water chlorination
<b>Total Haloacetic Acids (THAAs)</b>	60 ppb	37 ppb Range of individual test results: 20 - 63 ppb	30 ppb Range of individual test results: 2 - 66 ppb	29 ppb Range of individual test results: 12 - 54 ppb	Byproduct of drinking water chlorination

## Total Organic Carbon - Ratio of Removal Achieved Divided by Removal Required

Treatment Technique One Year Average	Baxter WTP One Year Average	Belmont WTP One Year Average	Queen Lane WTP One Year Average	Source
Must be greater than or equal to 1	1.27	1.46	1.44	Naturally present in the water

## Bacteria in Tap Water

	Level Allowed (EPA's MCL)	Ideal Goal (EPA's MCLG)	Highest Monthly Results	Source
<b>Total Coliform Bacteria</b>	Presence of coliform bacteria in 5% or less of more than 360 monthly samples	0	Highest % of positive samples: 0.80%	Naturally present in the environment. Their presence indicates potential contamination.

NOTE: Five of the samples with Total Coliforms tested positive for E. coli.

## Other Chemicals in Tap Water -

PWD monitors annually although we are only required to report every nine years

	Highest Level Allowed (EPA's MCL)	Ideal Goal (EPA's MCLG)	Highest Result	Range of Test Results for the Year	Source
<b>Nitrate</b>	10 ppm	10 ppm	4.7 ppm	0.83 - 4.7 ppm	Fertilizer runoff, sewage
<b>Barium</b>	2 ppm	2 ppm	0.04 ppm	0.02 - 0.04 ppm	Metal refineries or natural deposits
<b>Chromium</b>	0.1 ppm	0.1 ppm	0.001 ppm	0.001 - 0.001 ppm	Discharge from steel and pulp mills; erosion of natural deposits

## Clarity Characteristics - Tested at Water Treatment Plants

Turbidity (measure of clarity)	Baxter WTP	Belmont WTP	Queen Lane WTP	Source
<b>Treatment Technique Requirement</b>	95% of samples must be at or below 0.30 ntu	95% of samples must be at or below 0.30 ntu	95% of samples must be at or below 0.30 ntu	Soil runoff, river sediment
<b>Highest Single Value for the year</b>	0.12 ntu	0.134 ntu	0.087 ntu	Soil runoff, river sediment

NOTE: PWD achieved turbidity limits 100% at all times tested.

		Baxter WTP	Belmont WTP	Queen Lane WTP	
<b>Hardness</b> (as Calcium Carbonate)	Annual Average parts per million or grains per gallon	96 ppm or 6 grains	136 ppm or 8 grains	163 ppm or 10 grains	
	Annual Minimum parts per million or grains per gallon	82 ppm or 5 grains	117 ppm or 7 grains	137 ppm or 8 grains	
	Annual Maximum parts per million or grains per gallon	122 ppm or 7 grains	162 ppm or 9 grains	189 ppm or 11 grains	
<b>Alkalinity</b> (as Calcium Carbonate)	Annual Average	37 ppm	59 ppm	64 ppm	
	Annual Minimum	26 ppm	44 ppm	40 ppm	
	Annual Maximum	51 ppm	75 ppm	80 ppm	

## Sodium in Tap Water

Chemical	Baxter WTP One Year Average	Belmont WTP One Year Average	Queen Lane WTP One Year Average
<b>Sodium</b>	14 ppm or 3 mg per 8 oz. glass of water  Range of individual test results:  8 - 19 ppm or 2 - 5 mg per 8 oz. glass of water	34 ppm or 8 mg per 8 oz. glass of water  Range of individual test results:  20 - 44 ppm or 5 - 10 mg per 8 oz. glass of water	32 ppm or 8 mg per 8 oz. glass of water  Range of individual test results:  18 - 48 ppm or 4 - 11 mg per 8 oz. glass of water

*NOTE: We conducted monitoring for sodium throughout the year, although federal regulations do not require it.*

## Total Chlorine Residual – over 400 samples collected throughout the city every month

Total Chlorine in Tap Water	EPA Maximum Residual Disinfectant Level	One Year Average	Range of Highest Levels Detected at Taps
	4.0 ppm	2.2 ppm	1.5 - 2.8 ppm

## Radioactive Contaminants

Radioactive Contaminants	Level Allowed (EPA's MCL)	Ideal Goal (EPA's MCLG)	Level Detected	Source
<b>Gross Beta</b>	50.0 pCi/L	0	5.78 pCi/L	Decay of natural and man-made deposits

EPA considers 50 pCi/L to be the level of concern for beta particles. During the period of 2001 and 2002, we tested two samples for gross alpha, gross beta, tritium, strontium 90 and uranium from two locations in our distribution system. One sample represented treated Delaware water and the other sample represented treated Schuylkill water. All results were below detection except a value of 5.78 pCi/L for gross beta for the treated Schuylkill water. This value is just above the EPA's method detection limit.

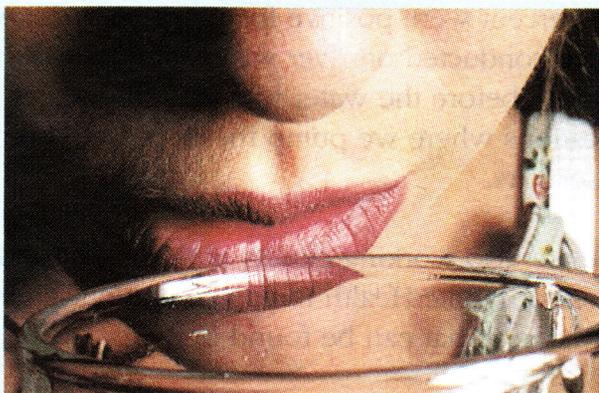
## Volatile and Synthetic Organic Chemicals (VOC and SOC)

Chemical	Level Allowed (EPA's MCL)	Ideal Goal (EPA's MCLG)	Highest Result	Range of Test Results	Source
<b>Atrazine</b>	3 ppb	3 ppb	0.1 ppb	0 - 0.1 ppb	Samples from Belmont and Queen Lane were positive. It is runoff from herbicide used on row crops.

Listed on pages eight and nine are our Drinking Water Quality Results for 2004. All results are better than the recommended federal levels designed to protect public health. We are pleased to report that we did not have any drinking water violations for 2004. In keeping with our long-standing unblemished record, we continue to be free of violations since the Safe Drinking Water Act was implemented over thirty years ago.

By reporting these results in the tables above, we are meeting a requirement of the EPA. Please see the glossary for definitions of abbreviations used in the tables.

Some contaminants may pose a health risk at certain levels. Others, such as turbidity, have no health effects. For information about potential risks, please visit our website (<http://www.phila.gov/water>), or call us at 215-685-6300. We will be happy to mail them to you.



## Glossary

**Action Level:** The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which 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 process.

**E. coli:** Human and animal fecal waste.

**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).

**ntu - nephelometric turbidity units:** Turbidity is measured with an instrument called a nephelometer. Measurements are given in nephelometric turbidity units.

**pCi/L - Picocuries per liter** (a measure of radioactivity)

**ppb - part per billion:** One part per billion is equivalent to one green apple in a barrel with 999,999,999 red apples.

**ppm - part per million:** One part per million is equivalent to one green apple in a barrel with 999,999 red apples.

**SOC - Synthetic Organic Chemical:** Organic compounds, such as pesticides and herbicides, that are commercially made.

**Total Coliform:** Coliforms are bacteria which are naturally present in the environment and are used as an indicator that other potentially harmful bacteria may be present.

**THAAs - Total Haloacetic Acids:** A group of chemicals called disinfection byproducts, which form during chlorination.

**TOC - Total Organic Carbons:** A measure of the carbon content of organic matter. The measure provides an indication of how much organic material in the water could potentially react with chlorine to form THAAs and TTHMs.

**TTHMs - Total Trihalomethanes:** A group of chemicals called disinfection byproducts, which form during chlorination. TTHMs form when natural organic matter in the rivers, such as leaves and algae, decompose and combine chemically with the chlorine added for disinfection. Levels of TTHMs vary seasonally.

**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 how we remove particles that cannot be seen by the human eye.

**VOC - Volatile Organic Chemical:** Organic compounds that include gases and volatile liquids.

**WTP:** Water Treatment Plant

## 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. Components of plumbing may have lead in them. You may be surprised to learn that brass fixtures, valves and faucets contain lead. Many homes still have leaded solder that was once used to join copper pipe together. Some homes in Philadelphia still have lead service lines and, when disturbed, these lines can contribute to lead in tap water.

The Philadelphia Water Department's primary role in helping you minimize your intake of lead is to reduce the effects of tap water on materials that contain lead. Water is corrosive and encourages the dissolving of lead from these materials. The Philadelphia Water Department has a permit with the Pennsylvania Department of Environmental Protection for operating under optimized corrosion control. Under this permit we maintain the pH of water between 6.8 and 7.8. We also maintain the amount of the

corrosion inhibitor, zinc orthophosphate, at greater than 0.12 mg/L (0.12 ppm) as phosphorus. These conditions minimize lead leaching from plumbing materials.

Currently, every three years the Philadelphia Water Department tests for tap water lead at more than 50 representative taps of vulnerable homes in the city. 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.

However, this could change in any year 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, the Philadelphia Water Department would notify its customers of the change while it works to return to minimum 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 Environmental Protection Agency's Safe Drinking Water Hotline at 800-426-4791.

## Research and Monitoring for *Cryptosporidium* and *Giardia*

*Cryptosporidium* and *Giardia* are microscopic organisms found in surface water throughout the U.S. They are found in animal wastes and sewage. They can be washed into rivers and streams when it rains. When ingested, they can result in diarrhea, fever, nausea and abdominal cramps. However, these are also symptoms of many intestinal diseases caused by bacteria, viruses or parasites. *Cryptosporidium* and *Giardia* cannot be diagnosed by symptoms alone. Most healthy individuals can overcome such illnesses within a few weeks. However, immunocompromised people are at greater risk of developing life-threatening illness. We encourage immunocompromised individuals to consult their doctor regarding appropriate precautions to take to avoid infection. *Cryptosporidium* must be ingested to cause disease, and it may be spread through means other than drinking water.

Most disease-causing organisms found in water can be eliminated by using chlorine. However, *Cryptosporidium* is resistant to chlorine. The best defense against these organisms is an effective water treatment process; most importantly, filtration. We look at turbidity to determine how well our filters are performing. Turbidity has no health effect. However, turbidity can interfere with disinfection and provide a medium for microbial growth. It may indicate the presence of disease-causing organisms. That's why it's important to us to ensure that our filters are working at their best.

Tiny particles – particles the same size as *Cryptosporidium* and smaller than particles visible to the human eye – are being successfully removed from our water.

The Philadelphia Water Department 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. Continual research is being performed by us to discover better testing methods, to determine the sources of these parasites in our rivers, and to ensure that our treatment practices to protect our drinking water are working.

### Testing Treated Water

In 2004, 36 tests were conducted on our treated drinking water. None were positive for *Giardia* and none were positive for *Cryptosporidium*.

### Testing Untreated River Water

Seventy-eight (78) percent of the samples of untreated water taken from the rivers were positive for *Giardia* and only 33 percent were positive for *Cryptosporidium*. These tests were conducted on river water samples drawn at our plants' intakes before the water was treated. Intakes are the locations where we pump the river water to our settling reservoirs.

We are also working closely with the Philadelphia Department of Public Health to ensure that our tap water is free of pathogens that can be found in rivers.

## Partnership for Safe Water

**I**n January 1996, the Philadelphia Water Department signed an agreement to join the national Partnership for Safe Water. This program was established by the EPA and the drinking water industry to evaluate and make improvements in water treatment processes and practices that are far more rigorous than those required by state or federal law.

The Partnership for Safe Water established a turbidity goal of less than 0.10 ntu (at all times tested). This goal is well below the State's 2002 regulatory standard of 0.30 ntu.

During 1996, we successfully met the Partnership's goal at all three of our water treatment plants. Two years later, all three plants were performing better than the Partnership's goal.

Today, all three plants continue to lower their ntu levels, achieving a total annual average of 0.06 ntu.

*We presently produce drinking water that is eight to ten times better than the national and state standards for turbidity. And, we are achieving the turbidity limits 100 percent of all times tested.*

Through our participation in this program, we have surveyed our treatment plants, treatment processes, operating and maintenance procedures, and management oversight practices to learn how we can improve our water system. We have already made many of the improvements, and we will continue to apply others.

These improvements have helped to enhance our water system's ability to prevent *Cryptosporidium*, *Giardia*, and other microbial contaminants from entering the water we treat.



**E**mployees of the Philadelphia Water Department's three water treatment plants have been honored with the Five-Year Directors Award for maintaining an elite status in the Partnership. The award is presented to utilities that have received Directors Awards for five consecutive years. The Philadelphia Water Department is one of only 37 water utilities across the country, and one of two utilities in Pennsylvania, to receive the prestigious award.

## Interesting facts about Philadelphia's water

### Fluoride

The Philadelphia City health code has required the Water Department to add fluoride to its treated water since 1954. Approximately one milligram per liter (mg/L), or one part per million (ppm), of fluoride is added, which is the amount recommended by the American Dental Association to provide maximum dental protection.

### Hardness

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. Hardness also affects other water qualities such as its corrosiveness, with naturally soft water being more corrosive.

### Temperature

The temperature of both the Schuylkill and Delaware rivers varies seasonally from approximately 32° to 79° F. The Water Department does not treat the water for temperature.

### Cloudy Water

Aeration is the process which takes place when the water flowing from your tap into your glass appears cloudy. This temporary condition is a result of dissolved air being released from the water and being temporarily suspended in the water in your glass. This most commonly happens in the winter time when the cold water in the water mains is warmed up quickly in household plumbing, thereby encouraging the dissolved air to come out of the water.

## WOW! Water in our world

**O**ur Fairmount Water Works Interpretive Center is an exciting interactive experience for children and families. You can make it rain, learn what you have in common with elephants, visit Pollutionopolis (the most polluted town around), and more!



The Interpretive Center is located near the Art Museum, at 640 Water Works Drive.

The hours are Tuesday through Saturday, 10:00 am to 5:00 pm, and Sunday from 1:00 pm to 5:00 pm. We are closed on city holidays. Admission is free. The Center is ADA accessible.

## Clean water begins and ends with you

**A**lways 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 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

**W**e participate in nearly 200 public and community events a year, including presentations made at schools, ongoing educational programs, and other environmental celebrations.

We greatly benefit from our citizens advisory council which has been working with us over the last few years to improve our communications with our customers. Citizens representing business and industry, education, environmental advocacy, senior citizens, regulatory agencies and civic and community groups have assisted us in developing public information about a variety of topics, including drinking water quality and storm water pollution prevention. Interested citizens are welcome to attend our Water Quality Education Citizens Advisory Council meetings. Call our Hotline below to confirm the meeting dates, times and locations.

## How to contact us

You can write to us at:  
Philadelphia Water Department  
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 and Internet addresses

**Philadelphia Water Department**  
215-685-6300 <http://www.phila.gov/water>

**Philadelphia Streets Department**  
215-686-5560 <http://www.phila.gov/streets>

**U.S. Environmental Protection Agency  
(Safe Drinking Water Hotline)**  
800-426-4791  
<http://www.epa.gov/safewater>

**Schuylkill River Source Water Assessment**  
<http://www.phillywater.org/schuylkill>

**Schuylkill Action Network**  
<http://www.phillywater.org/SAN>

**Fairmount Water Works Interpretive Center**  
215-685-0723  
<http://www.fairmountwaterworks.org>

# 2004

## Source Water Assessment and Protection

A Special Supplement to our 2004 Water Quality Report



### Source Water Assessment and Protection Updates

As part of the requirements of the 1996 Safe Drinking Water Act Reauthorization, the Pennsylvania Department of Environmental Protection has been conducting assessments of all potentially significant sources of contamination to all public drinking water sources. The Philadelphia Water Department has prepared this information to support local and state efforts to protect the quality of the City of Philadelphia's drinking water sources. The information in this summary pertains to the water supply areas for the Philadelphia Water Department's Baxter, Belmont, and Queen Lane water treatment plants. This is an assessment of the raw (untreated river) water only. For water quality information on our treated "tap" water, please see our 2004 Water Quality Report.

#### Belmont and Queen Lane Water Treatment Plants

The Belmont and Queen Lane water treatment plants provide treated water that comes from the Schuylkill River in Fairmount Park. The State drinking water program through a source water assessment report has found that our water supply is potentially most susceptible to challenges caused by discharges of treated and untreated sewage upstream, polluted runoff from urban areas and agricultural lands, transportation accidents and spills, and acid mine drainage. Most of these potential sources are located watershed-wide, but acid mine drainage originates over 100 miles upriver near the source of the Schuylkill River in Schuylkill County. Much closer to Philadelphia, the Wissahickon Creek was identified as an area that requires special attention from potential sources of pollution due to its potential impacts on source water quality at the Queen Lane intake.

Historically, we have developed and maintained emergency response plans to address accidents and spills that could potentially impact the water supply. Recently, we established a Source Water Protection Program that is working with upstream partners such as watershed organizations, regulatory agencies, planning commissions, municipalities, water suppliers, and farmers to prevent declines in water quality throughout the entire 2,000 square-mile watershed to keep our water supply as clean as possible. It is important for us to work with these upstream organizations because their work has positive benefits for the water supply. If you would like to receive a copy of the source water assessment summary or would like to know how to get involved in protecting your water supply or watershed, please call the Philadelphia Water Department at 215-685-6300, visit our website at [www.phila.gov/water](http://www.phila.gov/water), or see Table 2 at the end of this section for more information.

### Baxter Water Treatment Plant

The Baxter Water Treatment Plant, located in the Torresdale section of Philadelphia, provides treated water that comes from the Delaware River. The State drinking water program through a source water assessment report has found that our water supply is potentially most susceptible to challenges caused by discharges of treated and untreated sewage as well as polluted runoff between Camden and Trenton. Particular tributaries that require special attention to address polluted runoff from urban/residential areas and agricultural lands include the Pennypack Creek, Poquessing/Byberry Creek, Neshaminy Creek, Rancocas Creek, Lehigh River, and Musconetcong River. Historically, we have developed and maintained emergency response plans to address transportation accidents and spills along the Delaware River that could potentially impact the water supply, since it is a working river with barges, railroads, and many other transportation activities on or adjacent to it.

Historically, we have developed and maintained emergency response plans to address accidents and spills that could potentially impact the water supply. Recently, we established a Source Water Protection Program that is working with upstream partners such as watershed organizations, regulatory agencies, planning commissions, municipalities, water suppliers, and farmers to prevent declines in water quality throughout the entire 13,000 square-mile watershed to keep our water supply as clean as possible. It is important for us to work with these upstream organizations because their work has positive benefits for the water supply. If you would like to receive a copy of the source water assessment summary or would like to know how to get involved in protecting your water supply or watershed, please call the Philadelphia Water Department at 215-685-6300, visit our website at [www.phila.gov/water](http://www.phila.gov/water), or see Table 2 at the end of this section for more information.

### Moving from Assessment to Protection

With the Source Water Assessments completed, our award-winning Source Water Protection Program has moved from assessment to protection of our water supply, to prevent declines in water quality throughout the Schuylkill and Delaware watersheds. In addition, we are currently working with the Pennsylvania Department of Environmental Protection to develop Source Water Protection Plans for our water supplies and engaging in protection and restoration activities in parallel to our planning efforts.



*Don Welsh, regional administrator, U.S. Environmental Protection Agency Region III; Bernard Brunwasser, commissioner, Philadelphia Water Department; Cathy Curran Myers, deputy secretary for water management, Pennsylvania Department of Environmental Protection; and Carol Collier, executive director, Delaware River Basin Commission, display the SAN Constitution at the signing ceremony held at the Fairmount Water Works Interpretive Center.*

An example of our stakeholder success is the formation of the Schuylkill Action Network (SAN) in 2003. This is a partnership among the United States Environmental Protection Agency, Pennsylvania Department of Environmental Protection, the Philadelphia Water Department, and other organizations focused on working together to protect and restore the Schuylkill River as a premiere regional drinking water source, recreational resource, and natural habitat for fish and wildlife. To find out more about the SAN, please visit [www.phillywater.org/SAN](http://www.phillywater.org/SAN).

The SAN received one of 14 U. S. Environmental Protection Agency's Targeted Watershed Grants awarded in 2004. The grant, which totals \$1.14 million dollars, will be used to implement restoration and demonstration projects throughout the Schuylkill watershed. Projects will address the major sources of pollution in the watershed including abandoned mine drainage, agricultural runoff, and urban and suburban stormwater runoff. The SAN workgroups made great progress in 2004 in identifying and prioritizing restoration projects

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to be conducted under the Targeted Watershed grants. Current SAN membership includes government agencies, water suppliers, watershed groups and interested members of the community. In total, there are 130 members representing 80 groups on the SAN.

One recent project is the SAN Abandoned Mine Drainage Workgroup, which is focusing on the Pine Knot discharge. This discharge, located on the West Branch of the Schuylkill River near Minersville, PA, is the single largest contributor of metals to the Schuylkill River. The project will involve diverting overland flow out of the mine tunnels, which will reduce volume, and treating the discharge to remove iron, manganese, and aluminum. Another project is underway by the SAN Agriculture Workgroup, which will be installing stream bank fencing and plantings along approximately five miles of stream bank in Berks County. These improvements will keep livestock out of the streams, and will inhibit nutrient, sediment, and bacteria-laden runoff from reaching the stream.

### Providing Early Warning Protection

The Philadelphia Water Department is leading the development and implementation of an Early Warning System for the Schuylkill and lower Delaware Rivers. This system is an integrated communication and water quality monitoring network that supports the identification, notification and analysis of source water quality events such as chemical spills and other potential hazards.

The goal of the Early Warning System is to provide advance warning of potential source water contamination events to water suppliers, and give them tools to help them analyze and respond to those events. Water suppliers throughout the watershed support the effort and are participating in the system development. The Schuylkill and Delaware system is comprised of a partnership of water suppliers and government agencies, a web-based centralized database of water quality and event information, a telephone notification system and a network of real-time water quality monitors located throughout the watershed.

Funded in part by a \$775,000 grant from the Pennsylvania Department of Environmental Protection, the system provides water suppliers on both rivers with essential information when making critical treatment and pumping decisions in response to spills and accidents that can have a detrimental impact on the rivers.

The system serves over 3 million people in the Delaware Valley Early Warning System Network (the network serving the Philadelphia, Camden, Trenton Metro area). To date, eight utilities with 13 water treatment plants in Pennsylvania

and four utilities with three water treatment plants in New Jersey are participating in the system.

This type of system usually requires 4-5 years to develop, design and build. Our system came online within 2-1/2 years. This was due to advances in technologies used in the system, dedicated resources provided by the partnerships, as well as the overall receptiveness and support of the network group.

Recent incidents, such as the November 2004 oil spill on the Delaware, a tanker car derailment of hazardous materials along the banks of the Schuylkill, and a fire at a Bridgeport, Pennsylvania chemical plant, have emphasized the heightened need to improve coordination and planning among water suppliers for such events.

### Getting Involved

If you would like to know how to get involved in protecting your water supply or watershed, please call the Philadelphia Water Department at 215-685-6300, visit our website at [www.phila.gov/water](http://www.phila.gov/water), or see Table 2 on this page for more information.

TABLE 1: Who to Call to Report Various Situations

Situation	Who To Call	Phone
Dead Fish	Fish & Boat Commission	717-626-0228
	Fish & Boat Waterways Officer	717-587-0414
	PADEP	800-541-2050
Illegal Dumping & Related Pollution Activities	PADEP	800-541-2050
	Phila. Environmental Police Unit	215-686-3082
Sewage Spills	PADEP	484-250-5900
	PADEP	800-541-2050
	PWD	215-685-6300
Oil & Gas Spills/Accidents	PADEP	484-250-5900
	PADEP	800-541-2050
	PWD	215-685-6300

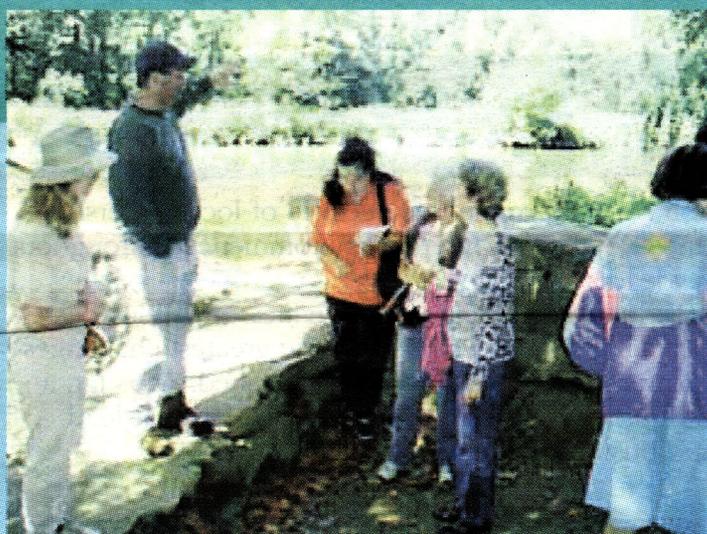
TABLE 2 – Places To Go To Get Involved In Protecting Your Local Streams, Rivers, and Water Supply

Organization	Activity Types	Phone Number	Website Address	Activity Types
Friends of the Pennypack	A, C, E, P, T	215-934-PARK	<a href="http://balford.com/fopp">http://balford.com/fopp</a>	<b>A:</b> Environmental activism <b>B:</b> Business related protection and education activities <b>C:</b> Clean-up of trash and litter <b>E:</b> Environmental education <b>F:</b> Fishing or fish recreation activities <b>L:</b> Land conservation and management <b>P:</b> Planting trees and streambank repair/protection <b>R:</b> Rowing, canoeing, and related boating activities <b>S:</b> Storm drain marking <b>T:</b> Water quality testing
Friends of the Wissahickon	A, C, E, P, T	215-247-0417	<a href="http://www.fow.org">http://www.fow.org</a>	
Friends of Fox Chase Farms	A, C, E, P	215-728-7900	<a href="http://www.foxchasefarm.org">http://www.foxchasefarm.org</a>	
Friends of the Tacony	A, C, E, P, T	215-685-0427	<a href="http://www.nlreep.org/tacony.htm">http://www.nlreep.org/tacony.htm</a>	
Friends of the Manayunk Canal	A, C, E, P, T	215-483-9238	<a href="http://www.manayunkcanal.org">http://www.manayunkcanal.org</a>	
Schuylkill Environmental Education Center	A, B, C, E, P, T	215-482-7300	<a href="http://www.schuylkillcenter.org">http://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">http://www.delawareestuary.org</a>	
Environmental Alliance for Senior Involvement	A, C, E, P, T	540-788-3274	<a href="http://www.easi.org">http://www.easi.org</a>	
Schuylkill River Development Council	B, E, L	215-985-9393	<a href="http://www.srdc.net/schuylkill">http://www.srdc.net/schuylkill</a>	
Philadelphia Canoe Club	R, F, T	215-487-9674	<a href="http://www.philacanoe.org">http://www.philacanoe.org</a>	
Friends of Fairmount Fish Ladder	F	215-742-5112	email: <a href="mailto:epac99@aol.com">epac99@aol.com</a>	
Cobbs Creek Environmental Education Center	A, C, E, P, T	215-685-1900	<a href="http://www.cobbscreek.org">http://www.cobbscreek.org</a>	
Wissahickon Restoration Volunteers	A, C, E, P, T	215-951-0339 x101	<a href="http://wissahickon.patrails.org">http://wissahickon.patrails.org</a>	
Wissahickon Valley Watershed Association	A, C, E, P, T	215-646-8866	<a href="http://www.wvwa.org">http://www.wvwa.org</a>	
Lower Merion Conservancy	A, C, E, P, T	610-645-9030	<a href="http://www.lmconservancy.org">http://www.lmconservancy.org</a>	
Philadelphia Water Department Water Quality Education Citizens Advisory Committee	A, E	215-685-6300	<a href="http://www.phila.gov/water">http://www.phila.gov/water</a>	

# WATER Wheel

*Clean water begins and ends with you!*

Pennypack River Conservation Plans Issue/2005



*PWD biologist Lance Butler shares information about water quality and fish of the Pennypack Creek at Fairmount Park's Pennypack Education Center's annual Fall Fest.*



*PWD River Conservation Plan team members participate in the Pennypack Education Center's annual Fall Fest.*

## Pennypack River Conservation Plan Update

**T**he Pennypack Rivers Conservation Plan Team, led by the Philadelphia Water Department and F.X. Brown, along with its partners the Fairmount Park Commission, the Friends of Pennypack Park, the Friends of Fox Chase Farms, the Pennypack Ecological Trust and the Montgomery County Planning Commission, were busy over the past summer, reaching out to a variety of stakeholders in the Pennypack watershed through outreach and education activities. The Team also worked hard to prepare even more entertaining and educational events for the fall. Here is an update on some of the creek-worthy activities that have been transforming the Pennypack watershed into a pro-active water-conscious community!

## Watershed Events & Seminars

**I**n July, residents of the Pennypack watershed joined Fairmount Park naturalists to traverse the trails of Fox Chase Farms on a "Pennypack Creek Wildlife and Watershed Walk." Participants became familiar with the local history, the rich flora and fauna, and a stream restoration project that has improved the water quality of the creek, while also providing a new habitat for the local wildlife.

The first of its kind "Pennypack Watershed Awareness Day" was integrated into the Pennypack Environmental Center's annual Fall Festival in September. This event started off with a two mile interpretive watershed walk,

*(continued on next page)*

The logo features a stylized blue water wheel on the left. To its right, the word "WATER" is written in large, bold, blue capital letters. Below "WATER", the word "Wheel" is written in a smaller, green, lowercase font. The "W" in "Wheel" is partially obscured by the water wheel graphic.

# WATER Wheel

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beginning in Lorimer Park and ending at the Pennypack Environmental Center. The Festival incorporated multiple watershed-related activities, including a macroinvertebrate monitoring display and Pennypack Map-o-Rama.

The "Water Watchers: How to Start a Neighborhood Stream Monitoring Program" also took place in September. This seminar presented community members with water quality monitoring techniques that would prepare them to assess and monitor the quality of their streams and their watershed in their own backyard!

In October, volunteers performed a series of "Visual Stream Assessments." The assessments gave local residents and other stakeholders an opportunity to participate in watershed science through hands-on learning. After participants go through a brief training session, they visually assess stretches of the Pennypack Creek and document the conditions of the creek. For example, the participants observe the color of the water, the presence of trash, smells, and streambank erosion, and document the existence of invasive and native species.

"Leave Only Footprints: Managing Your Household for Watershed Conservation" was offered in November. This special two-hour seminar taught watershed residents about the connections between homeowner practices and water quality in urban streams and rivers.

## Watershed Resident Survey

This past summer 2,000 Pennypack watershed residents were selected randomly to take part in a Pennypack Creek Watershed Survey. To date, 150 completed surveys have been returned. This type of local input will provide the Pennypack Rivers Conservation Plan Team with insight on the general knowledge of the watershed's residents and provide the Team with guidance on the river conservation planning process.

## Key Person Interviews

Another valuable source of information stems from the perspectives of local watershed leaders. This past summer and fall, the "Key Person Interviews" commenced throughout the Pennypack watershed. Community leaders and their constituencies were interviewed to determine how the Pennypack Creek influences their daily activities. Interviewees were also given the opportunity to establish their views on what the greatest challenges and assets are for river conservation planning in the Pennypack watershed. Thus far, a wide range of local leaders have contributed to this effort, from individuals that lead civic and political lives to religious and business leaders.

## Neighborhood Interview

The Pennypack Rivers Conservation Plan Team is also scouring the Pennypack watershed for residents that live near the creek to discuss the issues and concerns that the residents may have about their watershed. These interviews will take place for 10 days over the next year.

## Our timeline

The Pennypack Rivers Conservation Plan Team is working to have its data collection process for the watershed (that is, collecting information on water quality, land use, recreation, development, stormwater management, history, population, etc.) completed and analyzed by February of 2005. An Executive Summary of the Pennypack Rivers Conservation Plan should be available to the public by June, 2005. A complete final plan should be ready by November, 2005.

For additional information on the plan and how to participate, visit the Pennypack Partnership's website at [www.phillywater.org](http://www.phillywater.org). Go to "Watersheds Partnerships" and then to "Pennypack Watershed Partnerships." Next, go to "River Conservation Plan." You may also call 215-685-4944.