

2002 Annual Water Quality Report



Highland Reservoir No.1 - New Membrane Filtration Plant

The Pittsburgh Water & Sewer Authority (PWSA)

Pure Water for Pittsburgh and the Western Pennsylvania Region

Prepared by The Pittsburgh Water and Sewer Authority, in keeping with its commitment to provide a safe, dependable and ample supply of water to its customers.

We are pleased to report that our drinking water meets or exceeds all Federal and State requirements.

Este informe contiene informacion muy importante sobre su agua de beber. Traduzcalo o hable con alguien que lo entienda bien. (This report contains very important information about your drinking water. Translate it, or speak it to someone who understands it.)

Special Information for Immuno-compromised Individuals

Some people may be more vulnerable to cryptosporidium and other contaminants in drinking water than the general population. Immuno-compromised persons such as those with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly and infants can be particularly at risk from infections. These people should seek advice from their health care providers. Environmental Protection Agency (EPA) and Center for Disease Control guidelines on appropriate means to lessen the risk of infection by cryptosporidium and other microbiological contaminants are available from the Safe Drinking Water Hotline at 1-800-426-4791.

2002 Annual Water Quality Report

We are pleased to present to you The Pittsburgh Water and Sewer Authority's 2002 Annual Water Quality Report. This report is designed to inform you about the quality water and quality services The Pittsburgh Water and Sewer Authority provides to approximately 250,000 people throughout the City of Pittsburgh and surrounding areas.

Our mission is to strive to exceed customer expectations by providing the highest quality services at the lowest possible price. We make every effort to provide our consumers with a safe, dependable and ample supply of drinking water.

We would like our customers to understand the efforts we make to continually improve the water treatment process and to protect our water resources. One way we did that was to construct a membrane filtration plant in Highland Park instead of placing a floating cover over the 120 million gallon

reservoir. For over 122 years, Highland Reservoir No. 1 has been the focal point of our city's Highland Park; a place where the public enjoys walking.

After seven years of studies, The Pittsburgh Water and Sewer Authority, the City of Pittsburgh and the Highland Park community all arrived at a solution that pleased everyone. During the time that the studies were going on, a new technology matured sufficiently to be of use: Membrane filtration, specifically microfiltration. So, instead of covering the reservoir, the water from the reservoir would be filtered through banks of microfilters before being sent to the customers. Exhaustive pilot testing proved that the water leaving the membrane filtration plant would meet or exceed all water quality regulations. This plant has a capacity of 20 million gallons per day or approximately 1.5 tons of water per second. The filters consist of over half a million tiny tubes, with very small pores in the sides of the tubes. The pores are only 0.1 microns in diameter. Human hair is between 17 and 180 microns in diameter. Contaminants are readily removed by these fine filters.

As you can see from the illustration on the cover of this report, The Highland Reservoir No. 1 Membrane Filtration Plant was designed to look as if it had been built one hundred years ago and retrofitted as a modern facility to blend in with the original structure of the park. This plant brings to Pittsburgh one of the newest technologies in the water industry while complying with all of the Department of Environmental Protection Agency's regulations at the same time as preserving the rich tradition and history of Pittsburgh's Highland Park community. We are very pleased to have this wonderful facility be a part of our city.

Where does your water come from and how is it treated?

The Pittsburgh Water and Sewer Authority draws its water from the Allegheny River. No ground or well water is used. Approximately 65 million gallons of water is treated each day at our water treatment plant. The plant is capable of producing over 100 million gallons per day. The treatment process takes three full days and consists of three separate stages:

Stage 1 - Clarification

River water passes through a process called "clarification," in which silts and clays are removed. This stage involves chemical formation of clumped particles called "floc" which are then physically removed by gravity sedimentation.

Stage 2 - Filtration

The clarified water next passes slowly through sand and gravel filters in order to remove fine particles and microorganisms.

Stage 3 - Disinfection

The filtered water is finally treated with chlorine (over an 8 hour period) in order to ensure removal of any harmful microorganisms.

During the process, several chemicals are added to complete treatment. These include activated carbon, which sweetens the taste of the water and fluoride to prevent cavities in children's teeth.

Source Water Protection

Over the past two years, The Pittsburgh Water and Sewer Authority has worked with the Pennsylvania Department of Environmental Protection (PADEP) and the Allegheny County Health Department in preparing a Source Water Assessment Report for our source water, the Allegheny River. The report identifies the most likely sources of pollution affecting this river. These include upstream wastewater treatment plants, farm runoff and industrial sites. A series of public meetings were held during the two year period to discuss this study. A summary of the Source Water Assessment will be available on the PADEP website in the near future at (www.dep.state.pa.us).

Recent System Improvements

During the past year, The Pittsburgh Water and Sewer Authority has devoted a great deal of attention to ensure the security of the water supply. This has included completion of a formal Vulnerability Assessment of the entire water system, which has been submitted to the United States Environmental Protection Agency, as well as considerable research efforts aimed at improving the water quality monitoring aspects of security.

In 2002, The Pittsburgh Water and Sewer Authority joined the "Partnership for Safe Water." The Partnership is a voluntary national program administered by the USEPA and a number of drinking water industry associations. The goal of the program is to optimize water treatment performance beyond what is required by federal and state regulations in order to provide the safest and highest quality water possible to our customers.

Who monitors and ensures the quality of water?

The Pittsburgh Water and Sewer Authority monitors for constituents in your drinking water (on a continuous basis - 365 days per year) according to the Federal and State laws. Table #1 (which appears on pages 8 & 9) shows the results of our monitoring for the period of January 1, 2002 to December 31, 2002. While we have conducted more than 100,000 analyses for approximately 100 different chemical and microbial constituents last year, we only found detectable levels of the contaminants listed in the water quality table. It should be noted that none of the test results exceeded federal or state maximum contaminant levels (MCLs).

What does The Pittsburgh Water and Sewer Authority test for?

In general, the sources of all drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels over the surface of the land or through the ground it dissolves naturally occurring minerals and in some cases, radioactive material; water can also absorb or dissolve substances resulting from the presence of animal or human activity.

Contaminants that may be present in source or raw water include:

Microbial contaminants such as disease causing viruses and bacteria which may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife.

Inorganic chemical contaminants such as salts and metals, which can be naturally occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming.

Pesticides and herbicides which may come from a variety of sources such as agriculture, storm water runoff and residential uses.

Organic chemical contaminants including synthetic and volatile organic chemicals, which are by-products of industrial processes, petroleum production and mining activity and can also come from gas stations, urban storm water runoff and septic systems.

Radioactive contaminants which can be naturally occurring or the result of oil and gas production and mining activities.

In order to ensure that the tap water is safe to drink, the USEPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. FDA regulations establish limits for contaminants in bottled water. The Pittsburgh Water and Sewer Authority tests for contaminants that may be present in the source water prior to treatment. Results of the tests enable us to adjust the treatment process in order to maximize the reduction and removal of contaminants. Tests are also conducted during the treatment process and on the finished or treated water. Additional samples for testing are collected from our treatment plant, storage facilities, various points in the distribution network and customer's taps.

Abbreviations and Definitions

In the Water Quality Tables you will find many terms and abbreviations you might not be familiar with. To help you better understand these terms we have provided the following definitions:

- ND:** *Non-Detect* - Laboratory analysis indicates that the contaminant is not present at a detectable level.
- ppm or mg/l:** *Parts Per Million or Milligrams Per Liter* - One part per million corresponds to one minute in two years or a single penny in \$10,000.
- ppb or ug/l:** *Parts Per Billion or Micrograms Per Liter* - One part per billion corresponds to one minute in 2000 years or a single penny in \$10,000,000.
- NTU:** *Nephelometric Turbidity Unit* - Measurement of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.
- AL:** *Action Level* - The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
- TT:** *Treatment Technique* - A required process intended to reduce the level of a contaminant in drinking water.
- MCLG:** *Maximum Contaminant Level Goal* - The "goal" is 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.

Definitions continued on page 10

2002 Water Quality Tables *Table #1: Test results for regulated contaminants*

	Contaminant (Unit of measurement)	Violation Y/N	Level Detected	Range	MCLG	MCL	Likely Source of Contamination
Microbiological Contaminants	TURBIDITY	N	0.23 NTU (a) 100%	N/A N/A	N/A	<u>TT=1 NTU</u> TT=% of samples <0.3 NTU	Soil runoff
	TOTAL COLIFORM BACTERIA	N	<1%	ND to <1%	0	Presence of coliform bacteria in 5% of monthly samples	Naturally present in environment
	TOTAL CHLORINE RESIDUAL IN DISTRIBUTION SYSTEM (PPM)	N	0.50	<0.02 to 1.81	(b) 4	(c) 4	Water additive used to control microbes
	Footnote: (a) All turbidity samples met the turbidity limit of 0.3 NTU (b) MRDLG (c) MRDL						
Organic Chemical Contaminants	TOTAL TRIHALOMETHANES (PPB)	N	64	23 to 112	N/A	80	By-product of drinking water chlorination
	TOTAL HALOACETIC ACIDS (PPB)	N	14	4 to 32	N/A	60	By-product of drinking water chlorination
Radioactive Contaminants	BETA PHOTON EMITTERS (pCi/L) (c)	N	2.48	(a)	0	(b) 50	Decay of natural and man-made products
	ALPHA EMITTERS (pCi/L) (c)	N	0.85	(a)	0	15	Erosion of natural deposits
	Footnote: (a) Only one sample required (b) The MCL for beta particles is 4 mrem/yr. USEPA considers 50 pCi/L to be the level of concern for beta particles (c) Data is from year 1999						
Inorganic Chemical Contaminants	ARSENIC (PPB)	N	<1	<1 to 2	0	10	Erosion of natural deposits; runoff from orchards; runoff from glass and electronics production wastes
	BARIUM (PPM)	N	0.050	<0.008 to 0.073	2	2	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
	CHROMIUM (PPB)	N	2	<1 to 3	100	100	Discharge from steel and pulp mills; erosion of natural deposits
	COPPER (PPM) (a)	N	90 th percentile =0.052	No sites above AL out of 50 sites sampled	1.3	AL = 1.3	Corrosion of household plumbing systems; erosion of natural deposits
	FLUORIDE (PPM)	N	0.98	0.18 to 1.37	4	4	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
	LEAD (PPB) (a)	N	90 th percentile =6	1 site above AL out of 50 sites sampled	0	AL = 15	Corrosion of household plumbing systems, erosion of natural deposits
	NICKEL (PPB)	N	2	<1 to 5	100	100	Metal alloys, electroplating, batteries, and chemical production
	NITRATE (PPM)	N	0.62	(b)	10	10	Runoff from fertilizers, leaching from sewage, natural deposits
	SELENIUM (PPB)	N	2	<1 to 8	50	50	Discharges from petroleum and metal refineries; erosion of natural deposits; discharge from mines
	MERCURY (PPB)	N	<0.0002	<0.0002 to 0.0007	0.002	0.002	Erosion of natural deposits; discharge from refineries and factories; runoff from landfills; runoff from cropland
Footnote: (a) Data from year 2001 (b) Only one sample required							

MCL: *Maximum Contaminant Level* - The "maximum allowed" is the highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

MRDLG: *Maximum Residual Disinfectant Level Goal* - The level of drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contamination.

MRDL: *Maximum Residual Disinfectant Level* - The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

NA: *Non-Applicable* - Does not apply.

pCi/L: *Picocuries Per Liter* - A measure of radioactivity in water.

mrem/yr: *Millirems Per Year* - A measure of radiation absorbed by the body.

What does the test result information mean?

As you can see in Table 1, our system had no violations. We are proud that your drinking water meets or exceeds all Federal and State requirements. We have learned through our monitoring and testing that some constituents have been detected.

Unregulated Contaminant Monitoring Requirement

In response to EPA regulations, The Pittsburgh Water and Sewer Authority analyzed its finished water during each of the four seasons in 2002 for the presence of certain environmental contaminants of current interest. These unregulated contaminants are those for which the EPA has not established drinking water standards. The purpose of unregulated contaminant monitoring is to assist the EPA in determining the occurrence of unregulated contaminants in drinking water and whether future regulations are warranted.

Unregulated Contaminant Monitoring List (UCMR):

2,4-dinitrotoluene

2,6-dinitrotoluene

DCPA mono-acid degradate

DCPA di-acid degradate

4,4'-DDE

EPTC

Molinate

MTBE

Nitrobenzene

Terbacil

Acetochlor

Perchlorate

We are happy to report that none of the unregulated contaminants were detected in our water.

**ICR Monitoring Results
(July 1997 - December 1998)**

NOTE: The United States Environmental Protection Agency recently required all large water companies to conduct a special monitoring program. This program entitled the **Information Collection Rule (ICR)** involved analysis of additional samples over the 18-month period (July 1997 - December 1998). The purpose of the survey was to provide more information for use in writing future drinking water regulations.

The contaminants detected in Pittsburgh's drinking water during the ICR are listed below:

**Table # 2
TEST RESULTS FROM ICR MONITORING
(JULY 1997 - DECEMBER 1998)**

Contaminants (Unit of measurement)	Average Level Detected	Range
TTHM (Total Trihalomethanes) (ppb)	60.0	25.9 to 101.3
HAA (Total Haloacetic Acids) (ppb)	20.1	8.2 to 39.3
CH (Chloral Hydrate) (ppb)	7.6	ND to 21.4
TOX (Total Organic Halides) (ppb)	178.3	104 to 308
Total Chlorine (ppm)(Leaving Treatment Plant)	1.36	0.90 to 1.70
Total Chlorine (ppm)(In Distribution System)	0.52	0.10 to 1.30

Should you be concerned about Lead?

Infants and young children are typically more vulnerable to lead in drinking water than the general population. It is possible that lead levels at your home may be higher than at other homes in the community as a result of materials used in your home's plumbing. If you are concerned about elevated lead levels in your home's water, you may wish to have your water tested and flush your tap for 30 seconds to 2 minutes before using tap water. If you would like to have your water tested for lead, **free of charge**, please phone The Pittsburgh Water and Sewer Authority Laboratory at (412) 782-7553. Additional information is available from the Safe Drinking Hotline at 1-800-426-4791.

Lead in drinking water is rarely the sole cause of lead poisoning, but it can add to a person's total lead exposure. All potential sources of lead in the house should be removed, replaced or reduced.

It is important to point out that the use of lead solders or pipes in drinking water plumbing systems is illegal. **Never** use lead solder when repairing drinking water lines.

What about Cryptosporidium?

We constantly monitor the water supply for a large number of constituents. We have detected cryptosporidium (a microorganism) in untreated river water during the year 2002. We detected cryptosporidium in 6 of 12 monthly river samples but no cryptosporidium in drinking water samples. We believe it is important for you to know that cryptosporidium may cause serious illness in immuno-compromised individuals such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants and people with HIV/AIDS or other immune system disorders. These people should seek advice from their health care providers.

In General

All sources of drinking water are subject to potential contamination by constituents that are naturally occurring or man made. Those constituents can be microbes, organic or in-

organic chemicals or radioactive materials. 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 the 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 at **1-800-426-4791 (www.epa.gov)**.

If you have questions or want additional information

If you have any questions about this report please contact Dr. Stanley States, Manager of The Pittsburgh Water and Sewer Authority Water Quality Section at (412) 782-7553. We want our valued customers to be informed about their water.

This water quality report and additional information are available on The Pittsburgh Water and Sewer Authority's website: **www.pgh2o.com**. Additional copies can be obtained by calling the Communications Department at (412) 255-0767.

To learn more about The Pittsburgh Water and Sewer Authority, please attend our regularly scheduled board meetings. They are held on the second Friday of every month at 9:00 a.m. at our downtown office at:

The Pittsburgh Water and Sewer Authority
441 Smithfield Street
Pittsburgh, PA 15222

Finally

Thank you for allowing us to continue providing you with clean, quality drinking water. In order to maintain a safe and dependable water supply we need to make improvements, over time, that will benefit all of our customers. These improvements are sometimes reflected as rate structure adjustments. Thank you for your patience and understanding.

We at The Pittsburgh Water and Sewer Authority work around the clock to provide the highest quality water to every tap. We ask that all our customers help us protect our water sources, which are the heart of our community, our way of life and our children's future.

Important Information and Phone Numbers

- Mailing Address:** The Pittsburgh Water and Sewer Authority
441 Smithfield Street
Pittsburgh, PA 15222
- Administrative Offices:** Monday through Friday -
8:00 a.m. to 4:30 p.m.
Phone: (412) 255-8935
Fax: (412) 255-2304
- Customer Service:** For billing inquiries, name and address changes, final bills and meter repairs
Monday through Friday -
8:00 a.m. to 4:30 p.m.
Phone: (412) 255-2423
Fax: (412) 255-2304
- Emergency Dispatch Center:** For reporting of water main breaks, service outages and sewer emergencies
24 hours a day, seven days a week
Phone: (412) 255-2409 or
(412) 255-2429
Fax: (412) 393-2997
- Permit Counter:** For applications for new service, water meter purchases and applications for water and sewer taps
Monday through Friday -
8:00 a.m. to 4:30 p.m.
Phone: (412) 255-2443
Fax: (412) 393-0520



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