



PWSA Annual Drinking Water Quality Report 2017

PA Public Water Supply ID No. 5020038

Este informe contiene información importante acerca de su agua potable. Haga que alguien lo traduzca para usted, ó hable con alguien que lo entienda.
(This report contains important information about your drinking water. Have someone translate it for you, or speak with someone who understands it.)

We are pleased to present The Pittsburgh Water & Sewer Authority's (PWSA) 2017 Annual Drinking Water Quality Report.

Our constant goal is to provide you with a high quality, dependable, and ample supply of drinking water. We want you to understand the efforts we make to continually improve the water treatment process and to protect our water resources. We are committed to ensuring the quality of your water. If you have any questions about the report, please contact the PWSA Water Treatment Plant at 412.782.7552.

We want customers to be informed about their water. The Water Quality Report and additional information are available on PWSA's website: pgh2o.com. Additional copies may be obtained by calling PWSA Customer Service at 412.255.2423. If you want to learn more, please attend any of our regularly scheduled meetings on the fourth Friday of every month at 1200 Penn Avenue, Pittsburgh, PA, 15222. More information can be found at pgh2o.com/board.

PWSA provides water and sewer service to more than 300,000 customers throughout the City of Pittsburgh and surrounding areas. PWSA is the largest combined water and sewer authority in Pennsylvania producing an average of 70 million gallons of water daily. In addition, PWSA provides bulk water sales to Reserve Township, Fox Chapel Borough, and Aspinwall Borough, along with being interconnected to several other regional water systems for emergency purposes. The PWSA drinking water system contains approximately 965 miles of water lines, five reservoirs and 11 tanks with a storage capacity of 455 million gallons of water. The PWSA sewer system contains over 1,200 miles of sewer lines and four booster pumping stations.



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Where Does Your Water Come from and How is it Treated?

PWSA draws its water from the Allegheny River. We do not use ground or well water. Approximately 70 million gallons of water are treated each day at our drinking water treatment plant. The plant is capable of producing over 100 million gallons of water 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 the addition of treatment chemicals (coagulants) which form clumped particles called “floc,” which are then physically removed by gravity sedimentation.

STAGE 2: Filtration

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

STAGE 3: Disinfection

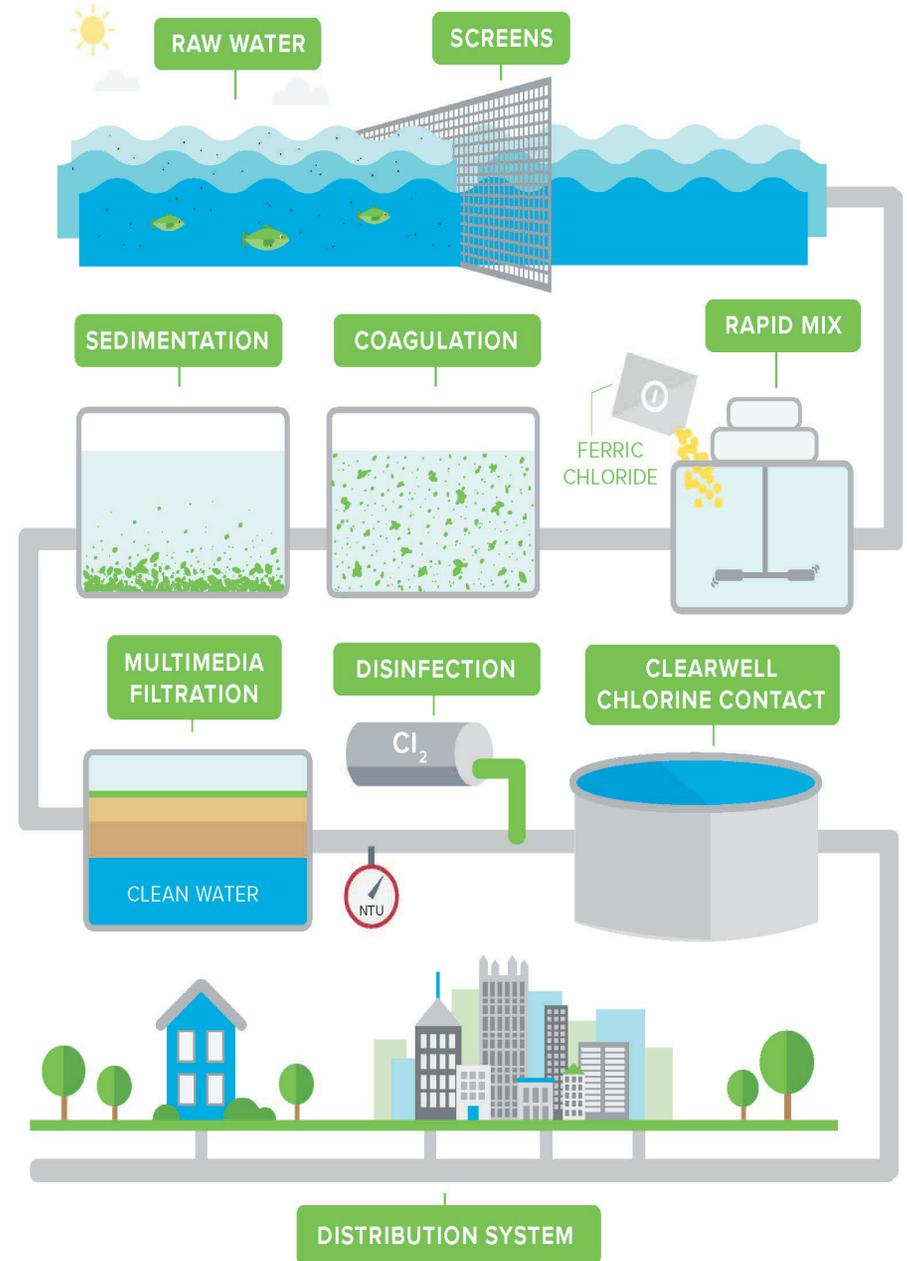
The filtered water is treated with chlorine to ensure removal of any harmful microorganisms. During this process, several additional chemicals are added to complete treatment. These include sodium carbonate to adjust the pH of the water and fluoride to prevent cavities.

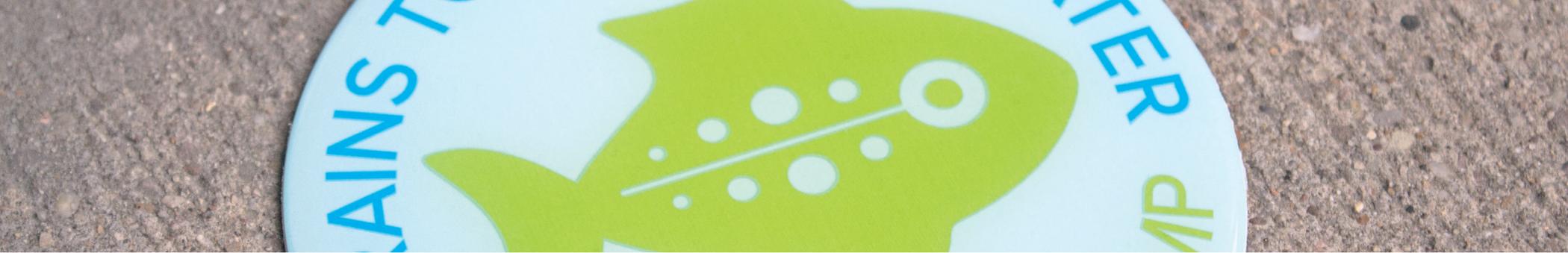
Secondary Treatment of Reservoir Water

In addition to our primary water treatment plant located near Aspinwall, PWSA operates a secondary treatment plant known as the Microfiltration Plant in Highland Park.

All of the water stored in the open-air Highland Reservoir #1 is originally treated in our primary plant. Then, before the Highland Reservoir #1 water is distributed to the public, it is retreated in our secondary plant. This membrane filtration plant utilizes state-of-the-art microfiltration and chlorination to remove any impurities that may have entered the water during storage in the reservoir.

PGH₂O WATER TREATMENT PROCESS





Stormwater

Stormwater pollution affects water quality. PWSA draws water from the Allegheny River. Anything that enters a storm sewer is ultimately released, untreated, into the rivers and streams. In addition to the Allegheny River being used as the source of our drinking water, it is also used for swimming, boating, and fishing.

The PWSA system is made up of sanitary, dedicated stormwater, and combined sewers. All new development is required to have separate storm sewers. As an older city, only about 25 percent of the system has separate storm sewers.

Residents can help prevent stormwater pollution by doing the following:

Dispose of trash properly.

Don't litter. You can help reduce cost and keep our rivers clean by properly disposing of waste.

Consider where you wash your car.

If you're washing your car in the driveway, all the soap is running into the street and may enter the storm sewers and eventually end up in the river.

Properly dispose of pet waste.

If pet waste is not properly disposed of during rain events, the bacteria may enter the storm sewers and eventually end up in the river.

Use fertilizer sparingly.

During rain events, fertilizer runs down the street and may enter the storm sewers and eventually end up in the river. Don't fertilize before a rain storm.

Stop oil leaks immediately.

Leaking oil runs down the street and may enter the storm sewers and eventually end up in the river. Check for oil leaks regularly and dispose of oil properly.

Who Monitors and Ensures the Quality of Water?

PWSA continuously monitors your drinking water in accordance with Federal and State regulations.

On pages 6 and 7, Table #2 shows our monitoring results at the Aspinwall Water Treatment Plant for the period of January 1, 2017 to December 31, 2017. On page 8, Table #3 shows our monitoring results at the Highland Park Membrane Filtration Plant during the same period. While we 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 tables. It should be noted that none of the test results exceeded federal or state maximum contaminant levels (MCLs).

Source Water Protection

PWSA's source water protection plan is approved by the Pennsylvania Department of Environmental Protection (PADEP). This report identifies the most likely sources of pollution affecting the Allegheny River.

These include accidental release of contaminants from industrial processes; cumulative impact of discharge from power plants; cumulative release of petroleum products from pipeline ruptures; stormwater runoff from lands adjacent to the river and Combined Sewer Overflows (CSOs). A summary of the Source Water Assessment is available on the PADEP website at dep.state.pa.us.

PWSA realizes the importance of protecting our source water and is actively involved with organizations that aid the Authority in accomplishing this goal. PWSA is a member of River Alert Information Network (RAIN), which is an early warning spill detection monitoring network along the Allegheny, Monongahela, and their tributaries. For more information please visit their site at rainmatters.org. PWSA is also a member of the Ohio River Valley Water Sanitation Commission (ORSANCO) and is enrolled in their organic detection program. For more information please visit their site at orsanco.org.

Should You Be Concerned About Lead?

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead found in drinking water is primarily from materials and components associated with water service lines and plumbing inside private property.

PWSA recently tested 114 pre-selected sites in its service area that have lead service lines or plumbing (Tier 1 sites). EPA has established an action level for lead of 15 parts per billion (ppb). This means that water providers must ensure that water from the customer's tap does not exceed this level in at least 90 percent of the homes sampled. The action level is the concentration of a contaminant which, if exceeded, triggers treatment or other requirements that include water quality parameter monitoring, corrosion control treatment, source water monitoring, public education, and lead service line replacement. An action level exceedance is not a violation. While a majority of those sites sampled resulted in no detection of lead or amounts less than the action level, 12.7 percent of the sites exceeded the action level. Another set of tests will be completed by June 30, 2018. PWSA is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components in your home. More information on lead in drinking water can be found at pgh2o.com/lead-facts.

Here are some steps you can take to reduce exposure to lead in drinking water:

Run your water to flush out lead

If you haven't used your water for several hours, run your cold tap for at least one minute before cooking or drinking. Homes with longer lead water service lines may require flushing for a longer period of time.

Use cold water for cooking and preparing baby formula

Do not cook with or drink water from the hot water tap. Do not use water from the hot water tap to make baby formula. Lead dissolves more easily in hot water.

Do not boil water to remove lead

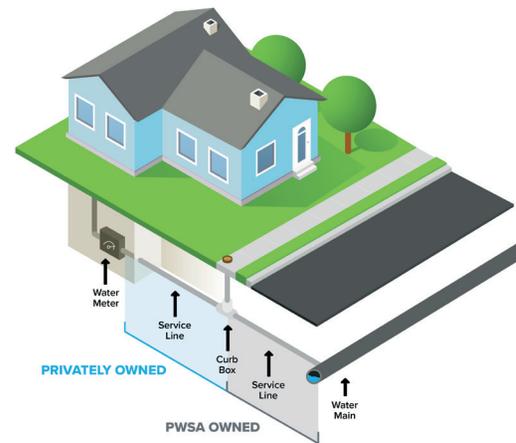
Boiling water will not reduce lead.

Look for alternative sources or treatment of water

The NSF Consumer Affairs Office has developed a NSF Water Fact Kit for

consumers that includes specific information about lead drinking water filters at nsf.org. Read the package to be sure the filter is approved to reduce lead or contact NSF International at 800.NSF.8010 or nsf.org.

Identify if your plumbing fixtures contain lead



There are lead check swabs that can detect lead on plumbing surfaces such as solder and pipes. These swabs can be purchased at plumbing and home improvement stores.

Consider having lead-containing pipes and fixtures replaced, or use the precautions listed above.

Contact PWSA if you decide to replace your lead service line and for information about coordinating removal of the

PWSA-owned portion of the service line.

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 are now available from the Safe Drinking Water Hotline or at epa.gov/safewater/lead.

PWSA residential water customers who are interested in testing their water may request a test kit, free of charge, by calling PWSA at 412.255.2423, or online at pgh2o.com/leadform.

Women for a Healthy Environment (WHE) is distributing water pitchers and filters that are certified to remove lead from tap water, and hosting community workshops to discuss lead exposure. Priority for filters is given to pregnant women and households with young children. WomenForAHealthyEnvironment.org.

What Does PWSA 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, and can pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in source or raw 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 stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- ▮ **Pesticides and herbicides** which may come from a variety of sources, such as agriculture, urban stormwater runoff, and residential uses.
- ▮ **Organic chemical contaminants** including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, can come from gas stations, urban stormwater 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 assure that tap water is safe to drink, the EPA and PADEP regulate the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) and PADEP regulations establish limits for contaminants in bottled water, which must provide the same protection for public health.

PWSA tests for contaminants that may be present in the source water prior to treatment. Results of the tests enables PWSA 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 water. Additional samples for testing are collected on a regular basis from our storage facilities, various points in the distribution network, and customers' taps.

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 at 1.800.426.4791.

Long Term Surface Water Enhancement Treatment Rule Round 2 (LT2)

Cryptosporidium is a microbial pathogen found in surface water throughout the U.S. Although filtration removes Cryptosporidium, the most commonly-used filtration methods cannot guarantee 100 percent removal. Our monitoring indicates the presence of these organisms in our source water. Current test methods do not allow us to determine if the organisms are dead or if they are capable of causing disease. Ingestion of Cryptosporidium may cause cryptosporidiosis, an abdominal infection. Symptoms of infection include nausea, diarrhea and abdominal cramps. Most healthy individuals can overcome the disease within a few weeks. However, immuno-compromised people are at greater risk of developing life-threatening illness. We encourage immuno-compromised 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.

Table 1: Test Results for Cryptosporidium in Allegheny River

CONTAMINANT	RESULT (OOCYSTS/L)	DATE SAMPLED	DATE ANALYZED
Cryptosporidium	0.190	1/19/2017	1/30/2017
Cryptosporidium	0.000	2/21/2017	2/27/2017
Cryptosporidium	0.000	3/21/2017	3/23/2017

Special Information for Immuno-Compromised Individuals

Some people may be more vulnerable to contaminants in drinking water than others.

Immuno-compromised persons, such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants may be particularly at risk from infections.

These people should seek advice about drinking water from their health care providers. Environmental Protection Agency (EPA) and 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 at 1.800.426.4791.

TABLE 2: Test Results for Regulated Contaminants at Aspinwall Treatment Plant

	CONTAMINANT (UNIT OF MEASUREMENT)	VIOLATION (Y / N)	LEVEL DETECTED	RANGE	MCLG	MCL	LIKELY SOURCE OF CONTAMINATION
MICROBIOLOGICAL CONTAMINANTS	Turbidity (a)	N	0.202 (b) 100%	N/A	N/A	TT=1 NTU for a single measurement TT= at least 95% of sample ≤ 0.3 NTU	Soil runoff
	Total Coliform	N	21	N/A	N/A	For systems that collect ≥ 40 samples/month 5% of samples are positive	Coliforms are bacteria that are naturally present in the environment and are used as indicators that other, potentially harmful bacteria may be present
	Free Chlorine Residual at Entry Point to Distribution System (ppm)	N	0.20	0.20 - 1.77	(c) 4	(d) 4	Water additive used to control microbes
	E. coli	N	1	N/A	0	Routine and repeat samples are total coliform - positive AND either is E. coli - positive or system fails to take repeat samples following E.coli - positive routine sample or system fails to analyze total coliform-positive repeat sample for E. coli	Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other potentially-harmful bacteria may be present, or that a potential pathway exists through which contamination may enter the drinking water distribution system. We found coliforms indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct assessment(s) to identify problems and to correct any problems that were found during these assessments. Additional sampling determined that the initial positive result was due to a sampling error.

TABLE 2: Test Results for Regulated Contaminants at Aspinwall Treatment Plant

	CONTAMINANT (UNIT OF MEASUREMENT)	VIOLATION (Y / N)	LEVEL DETECTED	RANGE	MCLG	MCL	LIKELY SOURCE OF CONTAMINATION
DISINFECTION BYPRODUCTS	Total Trihalomethanes (ppb)	N	(e) 56.3	13 - 105	80	80	Byproduct of drinking water chlorination
	Total Haloacetic Acids (ppb)	N	(e) 18.8	8 - 36	60	60	Byproduct of drinking water disinfection
LEAD & COPPER	Lead (ppb) (f)	N	90 th Percentile = 15	11 sites above AL (128 sites sampled)	15	AL = 15	Corrosion of household plumbing systems; erosion of natural deposits
	Lead (ppb) (g)	N	90 th Percentile = 21	15 sites above AL (118 sites sampled)	15	AL = 15	Corrosion of household plumbing systems; erosion of natural deposits
	Copper (ppm) (f)	N	90 th Percentile = 0.073	No sites above	1.3	AL = 1.3	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
	Copper (ppm) (g)	N	90 th Percentile = 0.12	No sites above	1.3	AL = 1.3	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
INORGANIC CHEMICAL CONTAMINANTS	Fluoride (ppm)	N	0.78	(h)	2	2	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
	Nitrate (ppm)	N	0.74	0.47 - 0.74	10	10	Runoff from fertilizers; leaching from sewage; natural deposits
	Barium (ppm)	N	0.03	(h)	2	2	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
TOC REMOVAL	Total Organic Carbon (TOC) (% removal) (i)	N	No quarters out of compliance	39.2% - 52.2%	N/A	TT = 35%	Naturally present in the environment



TABLE 3: Test Results for Regulated Contaminants at Highland Park Membrane Filtration Plant

	CONTAMINANT (UNIT OF MEASUREMENT)	VIOLATION (Y / N)	LEVEL DETECTED	RANGE	MCLG	MCL	LIKELY SOURCE OF CONTAMINATION
MICROBIOLOGICAL CONTAMINANTS	Turbidity (a)	N	0.081 (b) 100%	N/A	N/A	TT=1 NTU for a single measurement TT= at least 95% of sample ≤0.3 NTU	Soil runoff
	Free Chlorine Residual at Entry Point to Distribution system (ppm)	N	0.27	(d) 0.27 — 1.13	4	4	Water additive used to control microbes
INORGANIC CHEMICAL CONTAMINANTS	Fluoride (ppm)	N	Plant offline during monitoring period	(e)	2	2	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
	Nitrate (ppm)	N	Plant offline during monitoring period	Plant offline during monitoring period	10	10	Runoff from fertilizers; leaching from sewage; natural deposits
	Barium (ppm)	N	Plant offline during monitoring period	Plant offline during monitoring period	2	2	Discharge of drilling wastes; discharge from metal refineries; erosion of natural debris
	Cyanide (Free)	N	0.045	(h)	0.2	0.2	Discharge from steel/metal factories; Discharge from plastic and fertilizer factories

Footnotes for Table 2: Aspinwall Treatment Plant

- (a) Turbidity is a measure of the cloudiness of water. We monitor it because it is a good indicator of the effectiveness of our filtration system.
- (b) All turbidity samples met the turbidity limit of 0.3 NTU.
- (c) MRDLG.
- (d) MRDL.
- (e) Data based on Locational Running Annual Averages.
- (f) Data from June 2017.
- (g) Data from December 2017.
- (h) Only one sample required.
- (i) Adequate removal of TOC may be necessary to control unwanted formation of disinfection byproducts.

Other Violations: In 2017, PWSA received late reporting violations for the first quarter Alkalinity, third quarter Total Organic Carbon (TOC), and 2,3,7,8 TCDD (Dioxin). The monitoring was conducted correctly, but the results were reported late to the DEP.

Footnotes for Table 3: Highland Park Membrane Filtration Plant

- (a) Turbidity is a measure of the cloudiness of the water. We monitor it because it is a good indicator of the effectiveness of our filtration system.
- (b) All turbidity samples met the turbidity limit of 0.3 NTU. (Turbidity data from January 2017 only).
- (c) Lowest concentration of free chlorine detected. (Chlorine data from January 2017 only).
- (d) Minimum allowable free chlorine residual at entry point to distribution system.
- (e) Only one sample required.

Abbreviations & 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 µg/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 becomes just barely 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 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.

(MCL) Maximum Contaminant Level

The highest level of a contaminant 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 contaminants.

(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.

(N/A) Non-Applicable

Does not apply.

Level 1 Assessment

A Level 1 assessment is a study of the water system to identify potential problems and determine (if possible) why total coliform bacteria have been found in our water system.



What Do the Results Mean?

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 but are below the recommended minimum contaminant level (MCL) and therefore meet the regulatory requirements.

Stay Informed

Update your contact information and stay informed. It's important that your contact information is up to date so that we can notify you about planned construction, water emergencies, extended water outages, and provide other safety information. PWSA encourages all customers to provide updated contact information by going to our website at pgh2o.com and selecting "Update Contact Info" or by calling PWSA Customer Service at 412.255.2423.

This information ensures that we are able to make direct contact in the event of an emergency.