

Annual Drinking Water Quality Report

Berlin Borough Water Department

For the Year 2022, Results from the Year 2021

We are pleased to present to you this year's Annual Drinking Water Quality Report. This report is designed to inform you about the quality water and services we deliver to you every day. Our constant goal is to provide you with a safe and dependable supply of drinking water. We want you to understand the efforts we make to continually improve the water treatment process and protect our water resources. We are committed to ensuring the quality of your water.

If you are a landlord, you must distribute this Drinking Water Quality Report to every tenant as soon as practicable, but no later than three business days after receipt. Delivery must be done by hand, mail, or email, and by posting the information in a prominent location at the entrance of each rental premises, pursuant to section #3 of NJ P.L. 2021, c.82 (C.58:12A-12.4 et seq.).

Our drinking water source is wells. Our wells draw groundwater from the Kirkwood-Cohansey-Watertable Aquifer System the Mount Laurel-Wenonah Aquifer System and the Upper-Potomac-Raritan-Magothy Aquifer System. Our wells range in depth from 453 to 746 feet deep. Our water system purchases a limited amount of water from New Jersey American Water. The New Jersey Department of Environmental Protection (NJDEP) has completed and issued the Source Water Assessment Report and Summary for these public water systems, which are available at WWW.state.nj.us/dep/swap or by contacting NJDEP's Bureau of Safe Drinking Water at (609) 292-5550. You may also contact your public water system at 856-767-0056 to obtain information regarding these water systems Source Water Assessments. Berlin Borough Water Department's and New Jersey American Water's source water susceptibility ratings and a list of potential contaminant sources is included.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or 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. EPA/CDC guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbiological contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

Berlin Borough Water Department Test Results PWS ID# NJ0405001						
Contaminant	Violation Y/N	Level Detected	Units of Measurement	MC LG	MCL	Likely Source of Contamination
Radioactive Contaminants:						
Combined Radium 228 & 226 Test results Yr. 2020	N	Range = 1.5 – 3.9 Highest detect = 3.9	PCi/L	0	5	Erosion of natural deposits.
Gross Alpha Test results Yr. 2020	N	Range = ND – 3.9 Highest detect= 3.9	pCi/l	0	15	Erosion of natural deposits
Inorganic Contaminants:						
Barium Test results Yr. 2020	N	Range = 0.05 – 0.07 Highest detect = 0.07	ppm	2	2	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
Copper Test results Yr. 2020 Result at 90 th Percentile	N	0.22 No samples exceeded the action level	ppm	1.3	AL=1.3	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
Fluoride Test results Yr. 2020	N	Range = 0.5 – 0.7 Highest detect = 0.7	ppm	4	4	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
Lead Test results Yr. 2020 Result at 90 th Percentile	N	2.1 No samples exceeded the action level	ppb	0	AL=15	Corrosion of household plumbing systems, erosion of natural deposits
Mercury (inorganic) Test results Yr. 2020	N	Range = NDS – 0.07 Highest detect = 0.07	ppb	2	2	Erosion of natural deposits; discharge from refineries and factories; runoff from landfills; runoff from cropland
Nitrate (as Nitrogen) Test results Yr. 2021	N	Range = ND – 0.2 Highest detect = 0.2	ppm	10	10	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Disinfection Byproducts:						
TTHM Total Trihalomethanes Test results Yr. 2021	N	Range = 4 - 56 Highest LRAA = 52	ppb	0	80	By-product of drinking water disinfection
HAA5 Haloacetic Acids Test results Yr. 2021	N	Range = ND - 16 Highest LRAA = 19	ppb	0	60	By-product of drinking water disinfection

Total Haloacetic Acids (HAA5) and Total Trihalomethanes (TTHM) compliance is based on a Locational Running Annual Average (LRAA), calculated at each monitoring location. The LRAA calculation is based on four yearly quarters of results.

Regulated Disinfectants	Level Detected	MRDL	MRDLG
Chlorine Test results Yr. 2021	Range = 0.4 – 1.0 ppm Average = 0.6 ppm	4.0 ppm	4.0 ppm

Chlorine: Water additive used to control microbes.

The Berlin Water Department and New Jersey American Water routinely monitor for contaminants in your drinking water according to Federal and State laws. The tables show the results of that monitoring for the period of January 1st to December 31st, 2021. The state allows us to monitor for some contaminants less than once per year because the concentrations of these contaminants do not change frequently.

DEFINITIONS

In the "Test Results" tables you may find some terms and abbreviations you might not be familiar with. To help you better understand these terms we've provided the following definitions:

Non-Detects (ND) - laboratory analysis indicates that the constituent is not present.

Parts per million (ppm) or Milligrams per liter (mg/l) - one part per million corresponds to one minute in two years or a single penny in \$10,000.

Parts per billion (ppb) or Micrograms per liter - one part per billion corresponds to one minute in 2,000 years, or a single penny in \$10,000,000.

Parts per trillion (ppt) or nanogram per liter - one part per trillion corresponds to one minute in 20,000 years, or a single penny in \$100,000,000.

Picocuries per liter (pCi/L) - picocuries per liter is a measure of the radioactivity in water.

Nephelometric Turbidity Unit (NTU) - nephelometric turbidity unit is a measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

Action Level - the concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

Treatment Technique (TT) - A treatment technique is a required process intended to reduce the level of a contaminant in drinking water.

Maximum Contaminant Level - The "Maximum Allowed" (MCL) 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.

Maximum Contaminant Level Goal (MCLG) - The "Goal" (MCLG) 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.

Maximum Residual Disinfectant Level (MRDL): 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.

Maximum Residual Disinfectant Level Goal (MRDLG): The level of a 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

Total Organic Carbon - Total Organ Carbon (TOC) has no health effects. However, TOC provides a medium for the formation of disinfection byproducts. The

Treatment Technique for TOC requires that 35% - 45% of the TOC in the raw water is removed through the treatment processes.

Turbidity - Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium microbial growth. Turbidity is measured as an indication of the effectiveness of the filtration process. The *Treatment Technique* for turbidity requires that no individual sample exceeds 1 NTU and 95% of the samples collected during the month must be less than 0.3 NTU.

Sources of Lead in Drinking Water

The Berlin Borough Water Department is responsible for providing high quality drinking water but cannot control the variety of materials used in plumbing components. Although most lead exposure occurs from inhaling dust or from contaminated soil, or when children eat paint chips, the U.S. Environmental Protection Agency (USEPA) estimates that 10 to 20 percent of human exposure to lead may come from lead in drinking water. Infants who consume mostly mixed formula can receive 40 percent to 60 percent of their exposure to lead from drinking water. Lead is rarely found in the source of your drinking water but enters tap water through corrosion, or wearing away, of materials containing lead in the water distribution system and household plumbing materials. These materials include lead-based solder used to join copper pipes, brass, and chrome-brass faucets, and in some cases, service lines made of or lined with lead. New brass faucets, fittings, and valves, including those advertised as "lead-free", may still contain a small percentage of lead, and contribute lead to drinking water. The law currently allows end-use brass fixtures, such as faucets, with up to 0.25 percent lead to be labeled as "lead free". However, prior to January 4, 2014, "lead free" allowed up to 8 percent lead content of the wetted surfaces of plumbing products including those labeled National Sanitation Foundation (NSF) certified. Visit the NSF website at www.nsf.org to learn more about lead-containing plumbing fixtures. Consumers should be aware of this when choosing fixtures and take appropriate precautions. When water stands in lead service lines, lead pipes, or plumbing systems containing lead for several hours or more, the lead may dissolve into your drinking water. This means the first water drawn from the tap in the morning, or later in the afternoon if the water has not been used all day, can contain fairly high levels of lead.

Steps You Can Take to Reduce Exposure to Lead in Drinking Water

For a full list of steps visit: <https://www.state.nj.us/dep/watersupply/dvc-lead-consumer.html>

Run the cold water to flush out lead. Let the water run from the tap before using it for drinking or cooking any time the water in the faucet has gone unused for more than six hours. The longer the water resides in plumbing the more lead it may contain. Flushing the tap means running the cold-water faucet. Let the water run from the cold-water tap based on the length of the lead service line and the plumbing configuration in your home. In other words, the larger the home or building and the greater the distance to the water main (in the street), the more water it will take to flush properly. Although toilet flushing or showering flushes water through a portion of the plumbing system, you still need to flush the water in each faucet before using it for drinking or cooking. Flushing tap water is a simple and inexpensive measure you can take to protect your health. It usually uses less than one gallon of water.

Use cold, flushed water for cooking and preparing baby formula. Because lead from lead-containing plumbing materials and pipes can dissolve into hot water more easily than cold water, never drink, cook, or prepare beverages including baby formula using hot water from the tap. If you have not had your water sampled or if you know, it is recommended that bottled or filtered water be used for drinking and preparing baby formula. If you need hot water, draw water from the cold tap and then heat it.

Do not boil water to remove lead. Boiling water will not reduce lead; however, it is still safe to wash dishes and do laundry. Lead will not soak into dishware or most clothes.

Use alternative sources or treatment of water. You may want to consider purchasing bottled water or a water filter. Read the package to be sure the filter is approved to reduce lead or contact NSF International at 800-NSF-8010 or www.nsf.org for information on performance standards for water filters.

Determine if you have interior lead plumbing or solder. If your home/building was constructed prior to 1987, it is important to determine if interior lead solder or lead pipes are present. You can check yourself, hire a licensed plumber, or check with your landlord.

Replace plumbing fixtures and service lines containing lead. Replace brass faucets, fittings, and valves that do not meet the current definition of "lead free" from 2014 (as explained above). Visit the NSF website at www.nsf.org to learn more about lead-containing plumbing fixtures.

Remove and clean aerators/screens on plumbing fixtures. Over time, particles and sediment can collect in the aerator screen. Regularly remove and clean aerators screens located at the tip of faucets and remove any particles.

Test your water for lead. Please call 856-767-0056 to find out how to get your water tested for lead. Testing is essential because you cannot see, taste, or smell lead in drinking water.

Get your child tested. Contact your local health department or healthcare provider to find out how you can get your child tested for lead if you are concerned about lead exposure. New Jersey law requires that children be tested for lead in their blood at both 1 and 2 years of age and before they are 6 years old if they have never been tested before or if they have been exposed to a known source of lead.

Have an electrician check your wiring. If grounding wires from the electrical system are attached to your pipes, corrosion may be greater. Check with a licensed electrician or your local electrical code to determine if your wiring can be grounded elsewhere. DO NOT attempt to change the wiring yourself because improper grounding can cause electrical shock and fire hazards.

Water softeners and reverse osmosis units will remove lead from water but can also make the water more corrosive to lead solder and plumbing by removing certain minerals; therefore, the installation of these treatment units at the point of entry into homes with lead plumbing should only be done under supervision of a qualified water treatment professional.

Health Effects of Lead

Lead can cause serious health problems if too much enters your body from drinking water or other sources. It can cause damage to the brain and kidneys and can interfere with the production of red blood cells that carry oxygen to all parts of your body. The greatest risk of lead exposure is to infants, young children, and pregnant women. Scientists have linked the effects of lead on the brain with lowered IQ in children. Adults with kidney problems and high blood pressure can be affected by low levels of lead more than healthy adults. Lead is stored in the bones, and it can be released later in life. During pregnancy, the child receives lead from the mother's bones, which may affect brain development. Contact your local health department or healthcare provider to find out how you can get your child tested for lead if you are concerned about lead exposure. You can find out more about how to get your child tested and how to pay for it at

<https://www.state.nj.us/health/childhoodlead/testing.shtml>.

In July 2021, P.L.2021, Ch.183 (Law) was enacted, requiring all community water systems to replace lead service lines in their service area within 10 years. Under the law, The Berlin Borough Water Department is required to notify customers, non-paying consumers, and any off-site owner of a property (e.g., landlord) when it is known they are served by a lead service line*. Our service line inventory is available upon request.

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 from the Environmental Protection Agency's Safe Drinking Water Hotline at 1-800-426-4791.

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams ponds, reservoirs springs and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in the 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, and residential uses.
- Organic chemical contaminants, including synthetic and volatile organic chemicals, which are byproducts of industrial processes and petroleum production, and can also come from gas stations, urban storm-water runoff, and septic systems.
- Radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities.
- Pesticides and herbicides, which may come from a variety of sources such as: agriculture, urban storm-water runoff, and residential uses.

In order to ensure that tap water is safe to drink, EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration regulations establish limits for contaminants in bottled water, which must provide the same protection for public health. To insure the continued quality of our drinking water supply, we use sodium hypo-chloride for disinfection. We use aeration, filtration to guarantee the removal of potential contaminants, and we also do Ph adjustment.

The Safe Drinking Water Act regulations allow monitoring waivers to reduce or eliminate the monitoring requirements for asbestos, volatile organic chemicals and synthetic organic chemicals. Our system received monitoring waivers for asbestos and synthetic organic chemicals.

Cryptosporidium:

Cryptosporidium is a microbial pathogen found in surface water throughout the United States. Although filtration removes Cryptosporidium, the most commonly used filtration methods cannot guarantee 100% 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, infants and small children, and the elderly are at a 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.

If you have questions about this report or concerning your water utility, please contact John Allsebrook at 856-767-0056. We want our valued customers to be informed about their water utility. If you want to learn more, please attend any of our regularly scheduled Borough Council meetings at Borough Hall, 59 South White Horse Pike. Meetings are held on the first Monday of each month at 7:30 p.m.

We at the Berlin Borough Water Department work hard to provide top 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. Thank you.

New Jersey American Water - Western / Delaware System PWS ID # NJ0327001
Year 2021 Test Results

Contaminant	Violation Y/N	Level Detected	Units of Measurement	MCLG	MCL	Likely Source
Microbiologicals:						
Turbidity	N	Highest single result – 0.1 100% of samples < 0.3	NTU	N/A	TT % of samples < 0.3	Soil runoff, Naturally present in the environment
Total Organic Carbon	N	Range = 1.22 – 1.97 % Average removal = > 1.0%		N/A	TT >35- 45% removal	Soil runoff, Naturally present in the environment
Inorganics:						
Barium Test results yr. 2020	N	Range = ND – 0.1 Highest detect = 0.1	ppm	2	2	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
Nitrate	N	Range = ND – 1.01 Highest detect = 1.01	ppm	10	10	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Radiologicals:						
Gross Alpha	N	Range = 3.39 – 9.12 Highest detect = 9.12	pCi/l	0	15	Erosion of natural deposits

PFAS Per- and Polyfluoroalkyl Substances:						
PFOS Perfluorooctane Sulfonic Acid	N	Range = ND – 5.1 Highest detect = 5.1	ppt	N/A	13	Used in the manufacture of fluoropolymers
PFOA Perfluorooctane Acid	N	Range = 2.3 – 4.9 Highest detect = 4.9	ppt	N/A	14	Used in the manufacture of fluoropolymers

Regulated Disinfectants	Level Detected	MRDL	MRDLG
Chlorine	Range = 0.5 – 1.1 ppm Average = 0.5 ppm	4.0 ppm	4.0 ppm

Chlorine: Water additive used to control microbes.

Waivers: The Safe Drinking Water Act regulations allow monitoring waivers to reduce or eliminate the monitoring requirements for asbestos, volatile organic chemicals and synthetic organic chemicals. New Jersey American Water received a monitoring waiver for synthetic organic contaminants.

Berlin Water Department- PWSID # NJ0405001

Berlin Water Department is a public community water system consisting of 4 active wells.

This system's source water comes from the following aquifers: Kirkwood-Cohansey Watertable Aquifer System, Mount Laurel-Wenonah Aquifer System, Upper-Potomac-Raritan-Magothy Aquifer System.

This system can purchase water from the following water systems: New Jersey American Water, Winslow Township Water Department.

Susceptibility Ratings for Berlin Water Department Sources

The table below illustrates the susceptibility ratings for the seven contaminant categories (and radon) for each source in the system. The table provides the number of wells and intakes that rated high (H), medium (M), or low (L) for each contaminant category. For susceptibility ratings of purchased water, refer to the specific water system's source water assessment report.

The seven contaminant categories are defined at the bottom of this page. DEP considered all surface water highly susceptible to pathogens, therefore all intakes received a high rating for the pathogen category. For the purpose of Source Water Assessment Program, radionuclides are more of a concern for ground water than surface water. As a result, surface water intakes' susceptibility to radionuclides was not determined and they all received a low rating.

If a system is rated highly susceptible for a contaminant category, it does not mean a customer is or will be consuming contaminated drinking water. The rating reflects the potential for contamination of source water, not the existence of contamination. Public water systems are required to monitor for regulated contaminants and to install treatment if any contaminants are detected at frequencies and concentrations above allowable levels. As a result of the assessments, DEP may customize (change existing) monitoring schedules based on the susceptibility ratings.

Sources	Pathogens			Nutrients			Pesticides			Volatile Organic Compounds			Inorganics			Radionuclides			Radon			Disinfection Byproduct Precursors			
	H	M	L	H	M	L	H	M	L	H	M	L	H	M	L	H	M	L	H	M	L	H	M	L	
Wells - 4		1	3	2		2		2	2	2		2		3	1	2	2			2	2			4	

NJ American Water - Western Division - PWSID # NJ0327001

NJ American Water - Western Division is a public community water system consisting of 71 wells, 1 surface water intake and 11 purchased ground water sources.

This system's source water comes from the following aquifers and/or surface water body: upper Potomac-Raritan-Magothy Aquifer System, Delaware River, Englishtown Aquifer System, Lower Potomac-Raritan-Magothy Aquifer System, Middle Potomac-Raritan-Magothy Aquifer System, Mount Laurel-Wenonah Aquifer System, Potomac-Raritan-Magothy Aquifer System

This system can purchase water from the following water systems: Merchantville-Pennsauken, Mount Laurel MUA, Mt. Ephraim Water Department, Moorestown Water Department, Maple Shade Water Department, Haddonfield Water Department, Garden State W/C Blackwood, East Greenwich Twp. Water Department, Clementon Water Department, Berlin Water Department, Merchantville/Pennsauken water Company.

Susceptibility Ratings for NJ American Water - Western Division Sources

The table below illustrates the susceptibility ratings for the seven contaminant categories (and radon) for each source in the system. The table provides the number of wells and intakes that rated high (H), medium (M), or low (L) for each contaminant category. For susceptibility ratings of purchased water, refer to the specific water system's source water assessment report.

The seven contaminant categories are defined at the bottom of this page. DEP considered all surface water highly susceptible to pathogens, therefore all intakes received a high rating for the pathogen category. For the purpose of Source Water Assessment Program, radionuclides are more of a concern for ground water than surface water. As a result, surface water intakes' susceptibility to radionuclides was not determined and they all received a low rating.

If a system is rated highly susceptible for a contaminant category, it does not mean a customer is or will be consuming contaminated drinking water. The rating reflects the potential for contamination of source water, not the existence of contamination. Public water systems are required to monitor for regulated contaminants and to install treatment if any contaminants are detected at frequencies and concentrations above allowable levels. As a result of the assessments, DEP may customize (change existing) monitoring schedules based on the susceptibility ratings.

Sources	Pathogens			Nutrients			Pesticides			Volatile Organic Compounds			Inorganics			Radionuclides			Radon			Disinfection Byproduct Precursors		
	H	M	L	H	M	L	H	M	L	H	M	L	H	M	L	H	M	L	H	M	L	H	M	L
Wells - 71		6	65	18	4	49			71	22		49	20	45	6	20	42	9		18	53	6	65	
Surface water intakes - 1	1			1				1			1		1					1			1	1		

Pathogens: Disease-causing organisms such as bacteria and viruses. Common sources are animal and human fecal wastes.

Nutrients: Compounds, minerals and elements that aid growth, that are both naturally occurring and man-made. Examples include nitrogen and phosphorus.

Volatile Organic Compounds: Man-made chemicals used as solvents, degreasers, and gasoline components. Examples include benzene, methyl tertiary butyl ether (MTBE), and vinyl chloride.

Pesticides: Man-made chemicals used to control pests, weeds and fungus. Common sources include land application and manufacturing centers of pesticides. Examples include herbicides such as atrazine, and insecticides such as chlordane.

Inorganics: Mineral-based compounds that are both naturally occurring and man-made. Examples include arsenic, asbestos, copper, lead, and nitrate.

Radionuclides: Radioactive substances that are both naturally occurring and man-made. Examples include radium and uranium.

Radon: Colorless, odorless, cancer-causing gas that occurs naturally in the environment. For more information go to <http://www.nj.gov/dep/rpp/radon/index.htm> or call (800) 648-0394.

Disinfection Byproduct Precursors: A common source is naturally occurring organic matter in surface water. Disinfection byproducts are formed when the disinfectants (usually chlorine) used to kill pathogens react with dissolved organic material (for example leaves) present in surface water.