

# Annual Drinking Water Quality Report

## Berlin Borough Water Department

For the Year 2017, Results from the Year 2016

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.

Our drinking water source is wells. Our wells draw groundwater from the Mount Laurel-Wenonah, Cohansey and PRM Aquifers. 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 this public water system, which is available at [WWW.state.nj.us/dep/swap](http://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 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).**

<b>Berlin Borough Water Department Test Results</b>						
PWS ID# NJ0405001						
Contaminant	Violation Y/N	Level Detected	Units of Measurement	MC LG	MCL	Likely Source of Contamination
<b>Radioactive Contaminants:</b>						
Alpha emitters Test results Yrs. 2014, 2015 & 2016	N	Range = ND – 4.3 Highest detect = 4.3	pCi/l	0	15	Erosion of natural deposits.
Combined Radium 228 & 226 Test results Yrs. 2014, 2015 & 2016	N	Range = ND – 4.3 Highest detect = 4.3	PCi/L	0	5	Erosion of natural deposits.
<b>Inorganic Contaminants:</b>						
Antimony Test results Yrs. 2014, 2015, 2016	N	Range = ND – 0.3 Highest detect = 0.3	ppb	6	6	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder
Arsenic Test results Yrs. 2014, 2015 & 2016	N	Range = 0.2 – 0.3 Highest detect = 0.3	ppb	N/A	5	Erosion of natural deposits; runoff from orchards; runoff from glass and electronics production wastes
Barium Test results Yrs. 2014, 2015 & 2016	N	Range = 0.06 – 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. 2014 Result at 90 <sup>th</sup> Percentile	N	0.13 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 Yrs. 2014, 2015 & 2016	N	Range = 0.3 Highest detect = 0.3	ppm	4	4	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
Lead Test results Yr. 2014 Result at 90 <sup>th</sup> Percentile	N	4 1 sample out of 30 exceeded the action level	ppb	0	AL=15	Corrosion of household plumbing systems; erosion of natural deposits
Mercury (inorganic) Test results Yrs. 2014, 2015 & 2016	N	Range = 0.06 - 0.08 Highest detect = 0.08	ppb	2	2	Erosion of natural deposits; discharge from refineries and factories; runoff from landfills; runoff from cropland
Nickel Test results Yrs. 2014, 2015 & 2016	N	Range = 0.2 – 0.4 Highest detect = 0.4	ppb	N/A	N/A	Erosion of natural deposits
Nitrate (as Nitrogen) Test results Yr. 2016	N	Range = ND – 0.08 Highest detect = 0.08	ppm	10	10	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Selenium Test results Yrs. 2014, 2015 & 2016	N	Range = ND – 0.3 Highest detect = 0.3	ppb	50	50	Discharge from petroleum and metal refineries; erosion of natural deposits; discharge from mines
<b>Disinfection Byproducts:</b>						
TTHM Total Trihalomethanes Test results Yr. 2016	N	Range = 4 - 44 Highest LRAA = 36	ppb	0	80	By-product of drinking water disinfection
HAA5 Haloacetic Acids Test results Yr. 2016	N	Range = ND - 10 Highest LRAA = 3	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.

Microbiological Contaminants						
Total coliform Bacteria	N	1 positive routine and 1 positive repeat sample.		0	1 positive monthly sample.	Naturally present in the environment

We had a positive routine Total Coliform Bacteria sample in October 2016. We took extra samples and one of those samples also tested positive. Total Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially-harmful, bacteria may be present. Under the Revised Total Coliform Rule (RTCR), this triggered a Level 1 Assessment to determine if there were any problems or deficiencies. None were found. All subsequent test results were negative.

Regulated Disinfectants	Level Detected	MRDL	MRDLG
Chlorine Test results Yr. 2016	Average = 0.2 ppm	4.0 ppm	4.0 ppm

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 1<sup>st</sup> to December 31<sup>st</sup>, 2016. 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 will find many 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.

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 -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.

**Lead:** If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The Berlin Borough Water Department is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 second to 2 minutes before using water for drinking and cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water hotline or at <http://www.epa.gov/safewater/lead>

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.

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.**

<b>New Jersey American Water</b> <b>Western / Delaware System PWS ID # NJ0327001</b> <b>Year 2016 Test Results</b>						
<b>Contaminant</b>	<b>Violation Y/N</b>	<b>Level Detected</b>	<b>Units of Measurement</b>	<b>MCLG</b>	<b>MCL</b>	<b>Likely Source</b>
<b>Microbiologicals:</b>						
Turbidity	N	Range = 0.04 – 0.16 100% of samples < 0.3	NTU	N/A	TT % of samples < 0.3	Soil runoff, Naturally present in the environment
Total Organic Carbon	N	Range = 44 – 63% Lowest removal = 44%		N/A	TT >35-45% removal	Soil runoff, Naturally present in the environment
<b>Inorganics:</b>						
Copper Result at 90 <sup>th</sup> Percentile Test results Yr. 2016	N	0.3 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
Chromium (Total) Test results Yrs. 2014 & 2016	N	Range = ND – 1.3 Highest detect = 1.3	ppb	100	100	Discharge from steel and pulp mills; erosion of natural deposits
Barium Test results Yrs. 2014 & 2016	N	Range = ND – 0.1 Highest detect = 0.1	ppm	2	2	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
Lead Result at 90 <sup>th</sup> Percentile Test results Yr. 2016	N	2 No samples exceeded the action level	ppb	0	AL=15	Corrosion of household plumbing systems, erosion of natural deposits
Nickel Test results Yrs. 2014 & 2016	N	Range = ND – 8 Highest detect = 8	ppb	N/A	N/A	Erosion of natural deposits
Nitrate	N	Range = ND – 1.75 Highest detect = 1.75	ppm	10	10	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
<b>Radiologicals:</b>						
Gross Alpha	N	Range = ND – 5.94 Highest detect = 5.94	pCi/l	0	15	Erosion of natural deposits
Combined Radium 226 & 228	N	Range = ND – 1.38 Highest detect = 1.38	ppb	0	5	Erosion of natural deposits
<b>Disinfection Byproducts:</b>						
TTHM [Total trihalomethanes]	N	Range = 6 - 47 Highest LRAA = 27	ppb	0	80	By-product of drinking water disinfection
HAA5 Haloacetic Acids	N	Range = ND – 18 Highest LRAA = 11	ppb	0	60	By-product of drinking water disinfection
<b>Regulated Disinfectants</b>		<b>Level Detected</b>		<b>MRDL</b>		<b>MRDLG</b>
Chlorine Test results Yr. 2015		Range = 0.4 – 1.02 ppm		4.0 ppm		4.0 ppm

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.

**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.

**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.

**Unregulated Contaminant Monitoring Rule (UCMR)**

New Jersey American Water participated in the UCMR. 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 regulation is warranted. Our results are available upon request. Results below are from 2013 and 2014.

<b>Contaminant</b>	<b>Level Detected</b>	<b>Units of Measurement</b>	<b>Likely source</b>
1,1-Dichloroethane	Range = ND – 0.09	ppb	Halogenated alkane; used as a solvent
1,2,3-Trichloropropane	Range = ND – 0.04	ppb	Halogenated alkane; used as an ingredient in paint, varnish remover, solvents and degreasing
1,4-Dioxane	Range = ND – .39	ppb	Cyclic aliphatic ether; used as a solvent or solvent stabilizer in manufacturing and processing of paper, cotton, textile products, automotive coolant, cosmetics and shampoos
Bromochloromethane	Range = ND – 0.12	ppb	Used as a fire-extinguishing fluid, an explosive suppressant, and as solvent in manufacturing
Chlorate	Range = ND – 400	ppb	Agricultural defoliant of desiccant; disinfection byproduct; used in the production of chloride dioxide
Chromium	Range = ND – 1.8	ppb	Naturally-occurring element; used in the making of steel and other alloys; chromium -3 or -6 are used for chrome plating, dyes and pigments, leather tanning, and other wood preservation
Chromium (VI)	Range = ND – 1.3	ppb	Naturally-occurring element; used in the making of steel and other alloys; chromium -3 or -6 are used for chrome plating, dyes and pigments, leather tanning, and other wood preservation
Cobalt	Range = ND – 7.2	ppb	Naturally-occurring element found in the earth's crust and at low concentrations in seawater, and in some surface and ground water; cobaltous chloride was formally used in medicine as a germicide
Molybdenum	Range = ND – 1.8	ppb	Naturally-occurring element found in oreos and present in plants, animals and bacteria; commonly used form molybdenum trioxide used as a chemical reagent
Strontium	Range = 74 - 1390	ppb	Naturally-occurring element; historically commercial use of strontium has been in the faceplate glass of cathode-ray tube televisions to block x-ray emissions
Vanadium	Range = ND – 3.5	ppb	Naturally-occurring element metal; used as vanadium pentoxide which is a chemical intermediate and a catalyst

**Unregulated Contaminant Monitoring Rule (UCMR)**

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Contaminant	Level Detected	Units of Measurement	Likely source
Chlorate	Range = 95 - 230	ppb	Agricultural defoliant of desiccant; disinfection byproduct; used in the production of chloride dioxide
Chromium	Range = ND - 0.21	ppb	Naturally-occurring element; used in the making of steel and other alloys; chromium -3 or -6 are used for chrome plating, dyes and pigments, leather tanning, and other wood preservation
Chromium (VI) Hexavalent	Range = ND - 0.14	ppb	Naturally-occurring element; used in the making of steel and other alloys; chromium -3 or -6 are used for chrome plating, dyes and pigments, leather tanning, and other wood preservation
Strontium	Range = 270 - 360	ppb	Naturally-occurring element; historically commercial use of strontium has been in the faceplate glass of cathode-ray tube televisions to block x-ray emissions

**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		

**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.

