



CITY OF NEWARK: WINDY HILLS WATER TANK

# 2016 WATER QUALITY REPORT

## Annual Water Quality Report

The Environmental Protection Agency (EPA) requires public water suppliers to provide consumer confidence reports (CCR) to their customers. These reports are also known as annual water quality reports. The below report summarizes information regarding the sources used (i.e. rivers, reservoirs, or aquifers), any detected contaminants, compliance and educational efforts.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some substances. The presence of these substances does not necessarily indicate that water poses a health risk. In order to ensure that tap water is safe to drink, the EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. The United States Food and Drug Administration regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

More information regarding contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline at (800)-426-4791.

### Newark's High Quality Water

The City of Newark Water Department has been committed to providing high-quality water since 1888. As a result of our regular sampling and testing program, we are proud to report

Newark meets or exceeds the water quality standards of the Delaware Division of Public Health Office of Drinking Water and the Environmental Protection Agency. The tables on pages 4-6 of this report list those substances found in our finished water during calendar year 2015.

### How the Water is Treated

At the Curtis Water Treatment Plant (CWTP), water from the White Clay Creek is clarified with alum and polymer and then filtered to remove impurities. Chlorine is added to kill harmful bacteria and viruses. Other chemicals added to the water are fluoride to protect your teeth and lime to reduce the corrosivity of the water.

The South Well Field (SWF) Iron & Manganese Removal Plant aerates well water by a forced air blower to remove any volatile compounds and raise the pH. The water is then treated with chlorine and pumped through green sand filters, which remove iron and manganese, in addition to filtering the water. Other chemicals added to the water are fluoride, lime to further raise the pH, and polyphosphate to reduce the corrosiveness of the water.

### Managing the Distribution System

The City maintains approximately 150 miles of water main throughout the distribution system. Seven tanks store enough water to last two days.



The City's 318 million gallon reservoir provides a reliable source of raw water which can be treated and ready for drinking in times of heavy rain or drought. In an effort to keep sediment accumulation in our water mains to a minimum, we flush the entire system yearly.

Our treated water needs to remain fresh and retain sufficient chlorine for disinfection; as such, each month, we analyze 40 distribution system water samples for bacterial content and chlorine. Regulated substances are sampled as required.



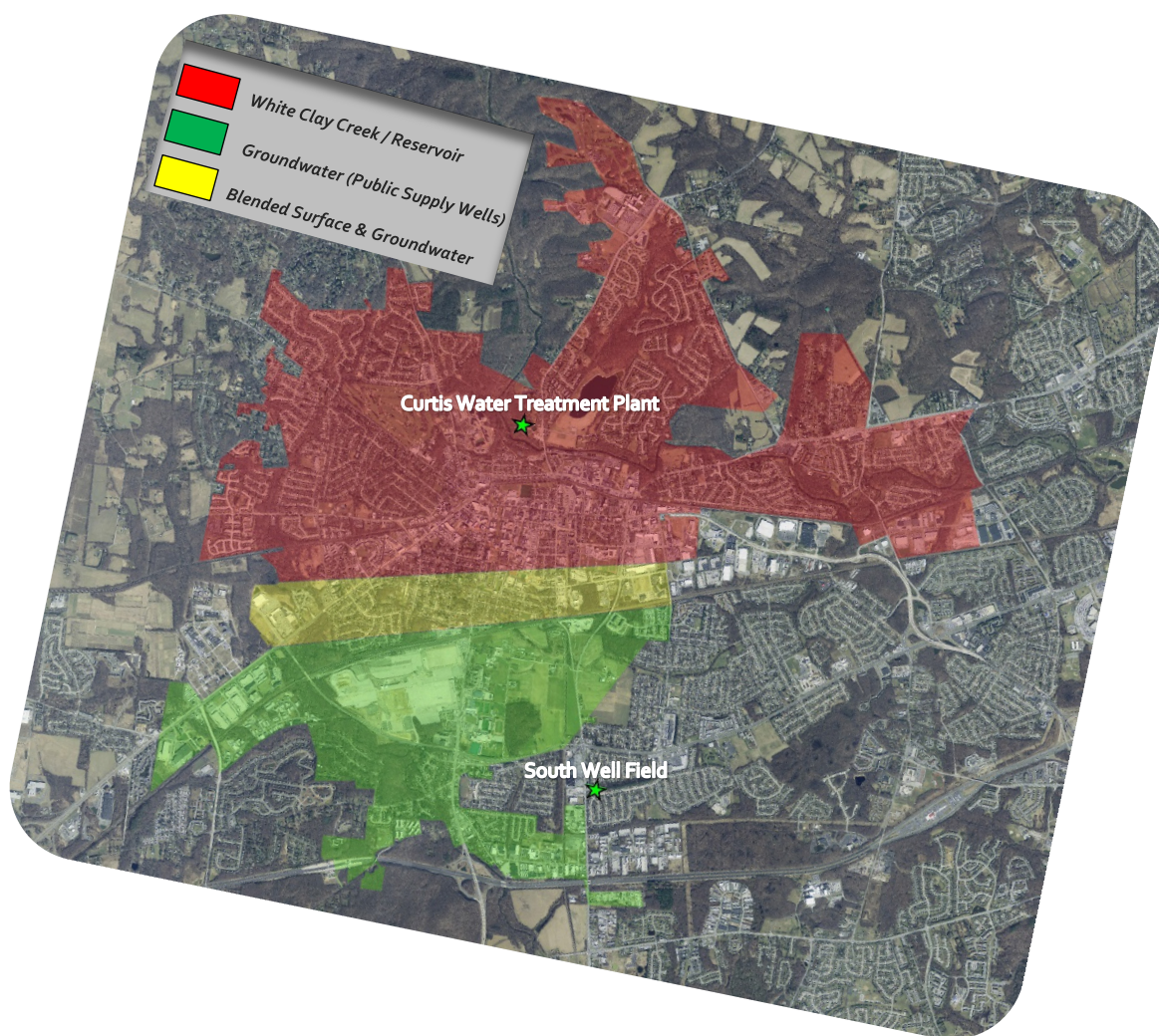
City of Newark  
Department of Public Works  
And Water Resources



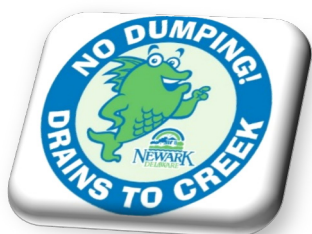
## The Source of Your Water

The adjacent map illustrates what source serves each section of the City. The South Well Field contains several wells that draw water from the sand and gravel Potomac and Columbia aquifers. The Curtis Water Treatment Plant has been withdrawing water from the White Clay Creek since 1992. The White Clay Creek is also the source of the water we use to fill the reservoir.

Water in our reservoir is recirculated by a pump through an engineered wetlands moat extending around the perimeter. At the north end of the reservoir, the water flows through a special sand and gravel material before being returned to the reservoir. This wetland's bench helps to clarify and remove nutrients from the water prior to being treated at the treatment plant.



## Protecting Our Resources



### White Clay Creek Watershed

The White Clay Creek is designated as a National Wild and Scenic River, and Newark is actively involved in the White Clay Creek Wild and Scenic watershed management plan. The plan delineates a cooperative approach to resource management and watershed protection. Newark also participates in the watershed-based Christina Basin Water Quality Management Strategy, which is designed to protect and improve the quality of

the streams including the White Clay Creek. Additionally, the City is financially invested in assisting our upstream farmers to implement best management practices to better manage runoff from animal manure and minimize the risk of waterborne pathogens.

### Groundwater Aquifers

Preventing pollution is the top priority in protecting our groundwater supply. In 1991, Newark developed and implemented Water Resource Protection Regulations. The regulations protect our drinking water supply from pollution that may be associated with inappropriate land uses in the areas around our wells.

### Source Water Assessment

In 1996, Congress amended the Safe Drinking Water Act, creating a new program titled Source Water Assessment and Protection Program. Each state is required to identify and evaluate all sources of water that are used as a drinking water source within the state. The goal of the program is to assess the susceptibility of public water sources to contamination and to promote and facilitate the protection of these water sources. Customers should contact the City of Newark Public Works & Water Department at 302-366-7000 about how to obtain a copy of our surface and groundwater assessments. Our surface and groundwater assessments are also available online:

<http://www.wra.udel.edu/publicservice/swapp>

# Water System Update

Report Prepared June 2016

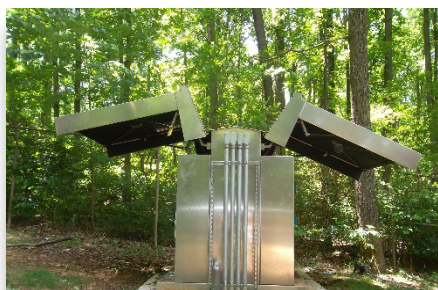
## South Well Field Treatment Plant



The City completed the rehabilitation at the South Well Field Water Treatment Plant (SWF). Each of the two filters were cleaned, repainted, and upgraded with new greensand plus filter media.

Repairs to the 300,000 gallon Windy Hills elevated water storage tank are nearing completion (see cover). Updates include the cleaning and painting of the interior and exterior walls, repairs to the roof vents, and various safety updates.

A new booster station was installed in the hills of the Abour Park neighborhood. The booster station provides consistent water pressure and better fire flow protection for our residents

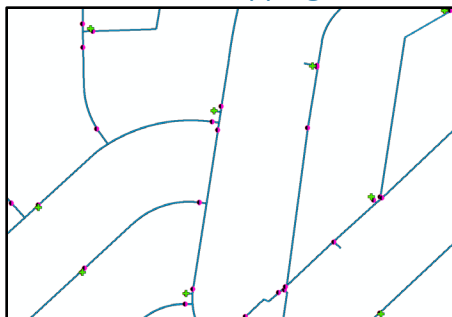


## Arbour Park Booster Station

Approximately 4,324 linear feet of water mains were replaced in the areas of Wilbur Street, Prospect Avenue, North Street, Courtney Street, and Darwin Drive. Improved water quality, pressure, and flows are all benefits from the project. A contract has recently been put out for bid to replace approximately 4,853 linear feet of water main later this summer in the areas of Hillside Road, Winslow Road, Beverly Road, and Ferncliff Road. Additionally, a contract has recently been put out to bid to install a new 12-inch water main along North Dilwyn Road in the Windy Hills Subdivision, across the White Clay Creek, to the terminus of Mary Ella Drive. The new main will provide a second source of water for this section of our water system improving the pressure, flow, and water quality.

A contract has been awarded for the repairs and painting of the Louviers elevated storage tank. It is anticipated construction will begin in the late summer or fall of 2016.

## Geographic Information Systems Asset Mapping



The City is in the final steps of digitally mapping its 143 miles of water main that includes over 3,000 valves and 750 fire hydrants. Managing our assets in a Geographic Information Systems (GIS) platform provides the means for the City to make more informed decisions about our distribution network. The data will allow for better targeted repair and replacement of assets, creation of an advanced water model for analysis of needed upgrades, and serve as a data warehouse for O&M manuals, maintenance and inspection history, and other data relevant to efficient operation of the water utility.

## NEWARK WATER FACTS

POPULATION SERVED: ~40,000

METERED CUSTOMERS: ~10,000

ANNUAL AVERAGE PUMPAGE: 3.4 MILLION GALLONS PER DAY

SERVICE AREA: 12 SQUARE MILES

PURCHASED WATER SUPPLY: < 1%

63%

Surface water treated at the Curtis Water Treatment Plant makes up roughly 63% of all drinkable water within the City.

37%

The remaining 37% of water for our residents is pulled from various groundwater supply wells.

## Conservation Tips

- 💧 Check your toilet for leaks by putting food coloring in your tank. If the color shows up in the toilet bowl without flushing. Leaking toilets can waste up to 600 gallons per day
- 💧 Turn the water off while brushing your teeth.
- 💧 Take shorter showers.
- 💧 Use dishwasher and clothes washer for full loads only.
- 💧 Keep a bottle of cold water in the refrigerator.
- 💧 Water your lawn only when necessary.
- 💧 Water in the evening or early morning to reduce evaporation.
- 💧 Avoid watering on windy days.
- 💧 Fixing a leaking faucet can save 140 gallons of water a week.
- 💧 Use a bowl of water to clean and prepare vegetables, rather than letting the faucet run.
- 💧 To easily identify water saving products, look for the **WaterSense** label when replacing faucets, toilets, and shower heads.







For more water conservation tips, check out our website at <http://cityofnewarkde.us>



## Annual Water Quality Report for the period of January 1 to December 31, 2015

Regulated Substances	Unit of Measure	Highest Level Allowed MCL	Ideal Goal MCLG	Highest Level Detected	Range of Levels Detected	Date	Violation	Major Sources
Barium	ppm	2	2	0.213	0.045 - 0.213	2015	N	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Chromium	ppb	100	100	2.5	1.7 - 2.5	2015	N	Discharge from steel and pulp mills; Erosion of natural deposits
Fluoride	ppm	2	2	1.6	0 - 1.6	2015	N	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories
Methyl Tert-Butyl Ether	ppb	10	0	0	0	2015	N	Oxygenate for fuel (i.e. gasoline)
Nickel	ppb	100	0	1.4	1.2 - 1.4	2015	N	Leachate from metals such as pipes and fittings.
Nitrate	ppm	10	10	7.1	1.5 - 7.1	2015	N	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Total Organic Carbon	ppm	TT	*	2.17	1.39 - 2.17	2015	N	Naturally present in the environment
Tetrachloroethylene	ppb	1	0	0.68	0 – 0.68	2015	N	Discharge from factories and dry cleaners
Turbidity	NTU	0.3	*	0.3	0.01-0.3	2015	N	Particulate matter from soil erosion and biological cycles
Radioactive Contaminants								
Beta/photon emitters	pCi/L	50	0	3.8	3.8	12/29/2011	N	Decay of natural and man-made deposits
Combined Radium 226/228	pCi/L	5	0	0.21	0.21	12/29/2011	N	Erosion of natural deposits


### \*Special Education Statements

-  **Most Recent Monitoring Statement:** the Office of Drinking Water allows us to monitor for some contaminants less than once per year. This is because the concentration of these contaminants do not change frequently. Some of our data though representative, are more than one year old.
-  **Nitrate:** Drinking water nitrate levels above 10 ppm are a health risk for infants of less than 6 months in age. High nitrate levels in drinking water can cause blue baby syndrome in infants consuming this water. Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. If you are caring for an infant you should seek advice from your health care provider.
-  **Total Organic Carbon:** (TOC) has no health effects. TOC is an indicator for the formation potential of disinfection byproducts - trihalomethanes (TTHM's) and haloacetic acids (HAA's). Drinking water containing these disinfection byproducts in excess of their respective MCL's may lead to adverse health effects. Our water is well below the MCL's for these disinfection byproducts.
-  **Turbidity:** the turbidity (cloudiness of the water) samples of water leaving the treatment plant must be less than 0.3 nephelometric turbidity units in at least 95% of samples in any month.

## Annual Water Quality Report (Cont.)

Microbiological Substances (40 samples per month)	Unit of Measure	Highest Level Allowed MCL	Ideal Goal MCLG	Highest Level Detected	Range of Levels Detected	Date	Violation	Major Sources
Total Coliform	each	We collect > 40 bacteria samples per month, no more than 5% of the samples can be positive	0%	0%	We collected 492 bacteria samples and had no positive bacteria samples	2015	N	Naturally present in the environment
Disinfectants and Disinfection By- Products	Unit of Measure	Highest Level Allowed MCL	Ideal Goal MCLG	Highest Level Detected	Range of Levels Detected	Date	Violation	Major Sources
Chlorine	ppm	4	4	1.2	1 - 1.2	2015	N	Water additive used to control microbes.
Haloacetic Acids (HAA5)*	ppb	60**	no goal	30.1	0 – 30.1	2015	N	By-product of drinking water disinfection.
Total Trihalomethanes (TTHM)	ppb	80**	no goal	27.2	1 – 27.2	2015	N	By-product of drinking water disinfection.
**This MCL is based on a 4 quarterly average								
Lead and Copper (32 samples)	Unit of Measure	Action Level	# of sites over AL	90th Percentile	Range of All Samples	Date	Violation	Major Sources
90th Percentile Copper	ppm	1.3	0	0.707	0.006 - 0.750	2014	N	A total of 32 samples were collected none exceeded 1.3 ppm
90th Percentile Lead	ppb	15	0	0	nd - 2.8	2014	N	A total of 32 samples were collected none exceeded 0.015 ppm


### \*Special Education Statements

-  **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 City of Newark 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 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about the 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 [www.epa.gov/safewater/lead](http://www.epa.gov/safewater/lead).

## Annual Water Quality Report (Cont.)

Unregulated Substances and Secondary Standards	Unit of Measure	SMCL	Goal	Average Level Detected	Annual Range	Date
Alkalinity	ppm	nr		40.8	26.0 – 55.6	2015
Chlorate*	ppb	nr		118.7	108 - 129	2015
Chloride	ppm	250	<250	67.3	41.9 – 95.4	2015
Chromium (total) **	ppb	nr		0.64	0.21 – 1.2	2015
Chromium-6**	ppb	nr		0.35	0.043 – 0.94	2015
Iron	ppm	0.3	<0.3	0	0	2015
Manganese	ppm	0.05	0	0.006	0 – 0.012	2015
pH	0-14 units	6.5-8.5	7.2	6.8	6.6 - 7.1	2015
Sodium	ppm	nr	<50	30.1	19.1 – 41.1	2015
Sulfate	ppm	250	<250	32.6	22.0 - 48.1	2015
Strontium**	ppb	nr		168.5	132 - 206	2015
Vanadium**	ppb	nr		0.51	0.32 – 0.74	2015
**Data were collected as part of the 2015 U.S. EPA Unregulated Contaminates Monitoring Rule 3 (UCMR3) sampling program.						

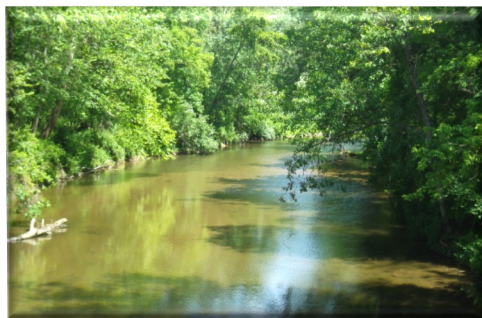
### \*Special Education Statements

 **Most Recent Monitoring Statement:** the Office of Drinking Water allows us to monitor for some contaminants less than once per year. This is because the concentration of these contaminants do not change frequently. Some of our data, though representative, are more than one year old.

### Definition of Terms

Action Level - AL	the concentration of a contaminant which when exceeded requires the water supplier to remediate.
Highest Level Detected (HLD) -	the highest level detected in a group of samples
Maximum Contaminant Level (MCL) -	the highest level of a contaminant that is allowed in drinking water.
Maximum Contaminant Level Goal (MCLG) -	the level of a contaminant in drinking water below which there is no known risk to health.
Secondary Maximum Contaminant Level (SMCL)	means an MCL which involves an adversely affect the taste, odor, color, or appearance (aesthetics)
millirem per year (mrem/yr)	the millirem per year is the unit of absorbed radiation dose in one year
Non detects (nd) -	laboratory analysis indicates that the contaminant is below the laboratory detection limit.
Not Regulated (nr) -	no MCL established for this contaminant
Picocuries Per Liter (pCi/l) -	the unit of measure using picocuries in one liter. The measure of the radioactivity in water.
ppb	parts per billion or micrograms per liter - one once in 7,350,000 gallons of water
ppm	parts per million or milligrams per liter - one once in 7,350 gallons of water.
Trihalomethanes and Haloacetic Acids -	compounds that maybe formed when organic material in the source water reacts with chlorine.
Treatment Technique (T.T.) -	a required treatment process intended to reduce the level of a contaminant in drinking water, coagulation, filtration, and disinfection of the raw water prior to public distribution.
Turbidity -	the measure of the clarity of water in nephelometric turbidity units (NTU).

## Controlling Runoff



Runoff is a major issue with regard to both surface and ground water quality. Here are several things you can do to reduce the negative effects of runoff:

- 💧 Control soil erosion whenever you disturb the ground. Protect disturbed ground with mulch or plants.
- 💧 Pick up and properly dispose of pet waste.
- 💧 Direct down spouts away from paved areas and towards vegetated areas.
- 💧 Establish rain gardens to allow rain water to slowly infiltrate into and recharge the ground water.
- 💧 Use rain barrels to collect and store rain water for gardening use.
- 💧 Reduce impervious surfaces by using porous paving blocks, filter cloth, concrete cellular mattresses, block and concrete pavers, gravel, stone, and vegetation.
- 💧 Support reforestation efforts along local streams and rivers.

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*Change or adjust your landscape maintenance practices.*

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- 💧 Minimize use of chemicals and fertilizer.
- 💧 The application of herbicides, pesticides, and fertilizers should follow recommended dosing procedures; and, applied only when rain is not in the immediate forecast.
- 💧 Leave mulched grass clippings on the lawn to feed the lawn and reduce fertilizer needed later.
- 💧 Don't mow lawns less than two inches. This develops longer roots, shades out weeds, and reduces water requirements.
- 💧 Minimize lawn watering practices. Learn about the best time to water your lawn and the best amount of water to apply.
- 💧 Plant native species. They are easier to maintain and feed the local wildlife.
- 💧 Compost garden debris, leaves and vegetable scraps for a free soil supplement.
- 💧 Don't mow to stream banks. Leaving taller grasses in these buffer areas reduces erosion and improves water quality.

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*And finally, below are important facts about water we should all try to remember.*

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- 💧 Wise water use is very important.
- 💧 Water is a natural resource shared by everyone.
- 💧 The amount of water on the earth does not change.
- 💧 Water is not always available where it is needed.
- 💧 Water is used by people in many different ways.
- 💧 Pollution makes water more difficult and expensive to make safe.
- 💧 Wasting water wastes energy because it requires energy to treat water, and pump it.

With everyone's help we can significantly improve and preserve the water resources that we rely upon to supply our potable water.

A portion of the information for this section was gathered from publications developed by the White Clay Creek Watershed Association.

Additional information can be found at the following web sites:

White Clay Wild and Scenic River Program  
[www.whiteclay.org](http://www.whiteclay.org)  
 White Clay Watershed Association  
<http://mercury.ccil.org/~wcwa/>  
 City of Newark  
<http://www.cityofnewarkde.us/>

## Important Health Notes

### Important Information about Your Drinking Water

#### Information for You

The sources of drinking water (both tap water and bottled water) include streams, ponds, reservoirs, 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 may pick up substances resulting from the presence of animals or human activity.

#### Substances that may be present in source water include:

- 💧 Microbial substances include viruses and bacteria, which may be naturally occurring or from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- 💧 Inorganic substances include salts and metals, which can be naturally occurring or result from urban storm runoff, industrial or domestic wastewater discharges, or farming.
- 💧 Pesticides and herbicides may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
- 💧 Organic chemical substances include synthetic and volatile organics, which are by-products of industrial processes and can also come from gasoline stations, urban stormwater runoff, and septic systems.
- 💧 Radioactive substances which can be naturally occurring or the result of oil and gas production and mining activities.

**Lead:** Recent events in Flint Michigan have highlighted the importance of proper water system management and operation as well as transparency, especially due to the public health implications that can come as a result. The City of Newark is in compliance with the lead and copper regulations, with no sample sites testing above the action level for either constituent. In fact, during the most recent testing, no lead was detected in 30 of the 32 sites tested. The two sites where lead concentrations were observed were below 1/5th of the level where corrective action would be necessary. If you have immediate concerns about the potential for lead in your drinking water, please call the Public Works and Water Resources Department at 302-366-7000 and we will work with you to perform lead sampling in your house free of charge.

One unique aspect of lead and copper sampling is that due to testing requirements, we rely on volunteers from the community who are willing to participate for sample gathering. If you are interested in participating in the next round of lead and copper sampling which will take place during the summer of 2017, please contact the Public Works and Water Resources Department at 302-366-7000 for consideration. Sampling locations will then be selected in accordance with our State approved sampling plan

**Cryptosporidium and Giardia:** You may have seen reports about Cryptosporidium and Giardia, microscopic organisms which can enter surface waters from runoff containing animal wastes. If ingested, Cryptosporidium and Giardia can cause diarrhea, fever and other gastro-intestinal symptoms. Crypto and Giardia were not found in Newark's finished water sample. The organisms are eliminated in our treatment process through filtration, clarification and disinfection.

**Radon:** Radon gas is found in soil. The gas moves through the ground into the air and may enter homes through foundations. Drinking water from groundwater may add radon to the home air. The EPA indicates the risk is small compared to the radon entering through soil. Standards for monitoring radon in drinking water have not been set by EPA and the Delaware Office of Drinking Water.

**Special Populations** Some people may be more vulnerable to substances 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 infections by cryptosporidium and other microbial substances are available from the EPA Safe Drinking Water Hotline at (800) 426-4791.



If you have any questions concerning your water, your water service, or this report, please call or write to us at:

City of Newark  
PWS ID: 0000630  
Department of Public Works & Water Resources  
c/o Tom Coleman, Tim Filasky, Mark Neimeister or Andrea Coyle  
220 South Main Street  
Newark, Delaware 19711  
(302) 366-7000  
<http://cityofnewarkde.us>.

Newark City Council meets on the second and fourth Monday's of the month. The meetings are held in the Newark City Council Chamber at the Newark Municipal Building, 220 South Main Street Newark, Delaware, starting at 7:00 pm.

Additional Information can be obtained by calling the EPA Safe Drinking Water Hotline (800) 426-4791

# 2016 WATER QUALITY REPORT

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Newark, Delaware 19711