Annual Water Quality Report 2019

Combined Annual Water Quality Reports

Summarizing Test Resuts from 2019

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Newport News Waterworks
DEPARTMENT

Annual Water Quality Report

Summarizing test results from 2019

Newport News Waterworks Department

Lower Peninsula System

ABOUT THIS REPORT

This annual water quality report or "Consumer Confidence Report" is written, prepared and distributed by the City of Newport News Waterworks Department (Newport News Waterworks) as required by the Safe Drinking Water Act. It is reviewed and approved by the Virginia Department of Health, Office of Drinking Water in Norfolk. This report explains where your water comes from, what our tests show about it and other things you should know about your drinking water.

This report and the water quality report for our Lightfoot System are available online at nnva.gov/waterqualityreport. Both online reports include additional test results. A paper copy of this report is available at all local libraries in the Waterworks service area, in our walk-in services lobby at 700 Town Center Drive in Newport News, and in city halls and county offices in our service area. If you would like to receive a copy of this report in the mail, please call Waterworks at 757-926-1000.

HOW CAN I GET INVOLVED?

Since Waterworks is a department of the City of Newport News, major decisions about your drinking water are made by Newport News City Council. They meet on the second and fourth Tuesdays of each month at 7:00 pm, and you are welcome to attend and participate. These meetings are broadcast live on the Newport News City Channel (in Newport News - Cox channel 48 and Verizon FIOS channel 19) and streamed live on Facebook at www.facebook.com/NewportNewsTV. They also can be viewed live or on-demand by all customers in our service area at www.nnva.gov/nntv.

NOTICIA EN ESPAÑOL

Este reporte continiene información importante acerca de la calidad del agua potable. Haga que algien lo traduzca para usted, o hable con alguien que lo entienda.

CONTENTS

YOUR WATER UTILITY

Newport News Waterworks serves as a regional water provider for five jurisdictions: Newport News, Hampton, Poquoson, York County and part of James City County. We are committed to providing a reliable supply of high quality drinking water to our customers. Our drinking water is treated and tested using state-of-the-art equipment and advanced procedures, and it meets or surpasses state and federal standards. The bottom line: The quality of your water is excellent.

WHERE YOUR WATER COMES FROM

The primary source of your drinking water is surface water from the Chickahominy River. When water is available, it is pumped from the river above Walkers Dam and transferred through pipes to our reservoirs for storage.

Waterworks owns and operates five reservoirs that store and supply water to our two treatment plants.

Very small amounts of treated brackish (slightly salty) groundwater from deep wells in the Lee Hall area provide a second source of water. The two source waters are treated separately, then blended together before being distributed to the service area.

SOURCE WATER ASSESSMENT

VDH VIRGINIA DEPARTMENT OF HEALTH
Protecting You and Your Environment

The Virginia Department of Health (VDH) updated its Source Water Assessment of Waterworks' surface water sources in 2019. The report consists of maps showing the source water assessment area, an inventory of known land use activities, potential sources of contamination, a susceptibility explanation chart and definitions of key terms. Using the criteria developed by the state in its approved Source Water Assessment Program, Waterworks' surface water sources are rated as relatively high in susceptibility to contamination (which is one reason why water treatment is so important), while our deep groundwater wells are rated as low in susceptibility. The Source Water Assessment is available from Waterworks by calling Customer Service at 757-926-1000.

MORE ABOUT SOURCE WATER

WHAT'S IN MY WATER BEFORE IT'S TREATED?

Generally speaking, 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 radioactive material and can pick up substances resulting from the presence of animals or from human activity. Substances that may be present in 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 runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- **Pesticides and herbicides** that may come from a variety of sources such as agriculture, stormwater runoff, and residential uses.
- **Organic chemical contaminants**, including synthetic and volatile organics, are by-products of industrial processes and petroleum production, and also can come from gas stations, urban stormwater runoff, and septic systems.
- **Radioactive contaminants**, which can be naturally-occurring or be the result of oil and gas production and mining activities.

HOW WE TEST YOUR WATER

To ensure that tap water is safe to drink, U.S. Environmental Protection Agency (EPA) regulations limit the amount of certain contaminants in water provided by public water systems. (The U.S. Food and Drug Administration is responsible for setting these limits on bottled water.) The water quality information listed here is based upon tests conducted in 2019 by Newport News Waterworks. Samples of finished water were taken at regular intervals from specific locations (the treatment plants, residences, and businesses) across the Waterworks service area.

Every regulated substance that we detected in the water, even in the smallest amounts, is listed in the table on pages 6 and 7. The table contains the name of each substance, the highest level allowed by regulation (MCL), the ideal goals for public health (MCLG), the amount detected, the usual sources of such contamination, and whether or not Waterworks meets the set regulation. For help understanding the tables, please see the key terms on the next page and the footnotes at the bottom of the table. Tables with the results of testing for unregulated substances and non-regulated microbials can be found on pages 8 and 10.

An expanded version of the tables in this report, which list additional test results, can be found on our website at nnva.gov/waterqualityreport. A separate water quality report is available for our Lightfoot well system customers in York County. That report also can be found on our website. To request that copies of these reports be mailed to you, call Newport News Waterworks Customer Service at 757-926-1000.

KEY TERMS

We've defined these water-quality terms and abbreviations, some unique to the water industry, to help you better understand the test results on the following pages.

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

MCL: Maximum Contaminant Level - 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.

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.

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

MRDLG: Maximum Residual Disinfectant Level Goal - 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.

MRL: Minimum Reporting Level - Estimate of the lowest concentration of a compound that laboratories would report as a detection.

ND: Not detected - Does not equate to zero, but refers to an amount below analytical reporting limits.

NTU: Nephelometric Turbidity Unit - A measure of water clarity. Turbidity greater than five (5) NTUs is just noticeable to the average person.

pCi/L: Picocuries per liter - A measure of radioactivity. EPA considers 50 pCi/L to be the level of concern for beta particles.

ppb: Parts per billion or micrograms per liter (µg/L). Equivalent to one penny in $10 million.

ppm: Parts per million or milligrams per liter (mg/L). Equivalent to one penny in $10 thousand.

ppt: Parts per trillion or nanograms per liter [ng/L]. Equivalent to one penny in $10 billion.

TT: Treatment Technique - A required process intended to reduce the level of a contaminant in drinking water.

Turbidity: A measure of water clarity, which serves as an indicator of the treatment facility's performance.

WATER QUALITY TESTING RESULTS
REGULATED SUBSTANCES

Contaminant	Unit	EPA's Ideal Goal (MCLG)	Highest EPA Allowed Level (MCL)	Highest Reportable Result (what we found)	Range of Individual Test Results Low-High	Meets State & Federal Standards	Likely Source
INORGANICS							
Copper	ppm	0	AL = 1.3	0.062[1]	0.008-0.319	YES	Corrosion of household plumbing
Lead	ppb	0	AL = 15	<1.0[1]	<1.0	YES	Corrosion of household plumbing
Fluoride	ppm	4	4	0.93	0.66-0.93	YES	Added to promote strong teeth
Barium	ppm	2	2	0.027	0.026-0.027	YES	Erosion of natural deposits
Nitrate	ppm	10	10	0.057	0.057	YES	Erosion of natural deposits
Nitrite	ppm	1	1	0.002	<0.001-0.002	YES	Erosion of natural deposits
DISINFECTION BY-PRODUCTS AND PRECURSORS							
Total Trihalomethanes (TTHM)	ppb	0	80	20[2]	2-24	YES	By-product of chlorination
Haloacetic Acids (HAA5)	ppb	0	60	19[2]	2-22	YES	By-product of chlorination
Total Organic Carbon (TOC) Removal		none	TT	1.32[3]	0.68-1.69	YES	Naturally present in the environment
MICROBIOLOGICAL							
Turbidity	NTU	n/a	TT	0.21[4]	0.02-0.21	YES	Soil runoff
Total Chlorine (Chloramines)	ppm	MRDLG=4.0	MRDL=4.0	3.2[5]	<0.02-5.3[5]	YES	Water additive (disinfectant) used to control microbes
RADIOLOGICAL (FROM TESTING COMPLETED IN 2016)							
Radium-228	pCi/L	0	5	0.6	<0.6-0.6	YES	Erosion of natural deposits
Beta emitters	pCi/L	0	4	2.5	1.4-2.5	YES	Decay of natural & man-made deposits

Footnotes:

Except for radiological testing, which was completed in 2016, the results reported in the table above are for samples taken in 2018-2019. Samples taken in 2018 are part of required four-quarter or annual running averages.

(1) At least 90% of the samples were at or below this level. None of the individual samples exceeded the Action Level. Because our lead and copper levels are so low, we only have to test every three years. Lead and copper testing was completed in 2019. **(2)** The highest detected levels of THM and HAA are based on a specific location's four-quarter running average. The range numbers are the results from individual samples. The data in "Highest Result" column include samples from 2018. The range is for samples taken in 2019. **(3)** Compliance is based on a running four-quarter average. The range is the individual monthly ratio from both water treatment plants. TOC has no adverse health effects, but can be a critical component in the formation of disinfection by-products. The data in the "Highest Result" column includes samples from 2018. The range is for samples taken in 2019. **(4)** Turbidity is a measure of water cloudiness. It is a good indicator of the effectiveness of our filtration system. 100% of samples were within the turbidity limit. **(5)** For Chloramines, a system-wide annual running average is used. The range numbers are the results of individual samples. The data in the "Highest Result" column includes samples from 2018. The range is for samples taken in 2019.

MCLs are set at very stringent levels. To experience the possible health effects described for many regulated contaminants, a person would have to drink two liters of water at the MCL level every day for a lifetime to have a one-in-a-million chance of having a possible health effect.

ADDITIONAL TESTING

In 2019, Waterworks participated in the EPA's fourth round of the Unregulated Contaminant Monitoring Rule (UCMR4). Unregulated contaminants are those that don't yet have a drinking water standard set by the EPA. The purpose of monitoring for these contaminants is to help the EPA decide whether they need to be regulated in the future in order to protect public health. The results for contaminants we detected are shown in the table below.

UNREGULATED CONTAMINANT MONITORING REGULATION-4 (UCMR4)

UNREGULATED CONTAMINANTS

Contaminant	Unit	MRL	Average	Range of Test Results (Low-High)	Sources and Comments
Manganese	µg/L	0.4	9.6	2.91-24.1	Naturally-occurring element; commercially available in combination with other elements and minerals; used in steel production, fertilizer, batteries and fireworks; drinking water and wastewater treatment chemical; essential nutrient
Haloacetic Acids					
Dicloroacetic Acid (DCAA)	µg/L	0.2	11.6	1.6-27.1	By-product of drinking water chlorination
Trichloroacetic Acid (TCAA)		0.5	3.0	0.7-11.7	By-product of drinking water chlorination
Dibromoacetic Acid (DBAA)		0.3	<0.3	<0.3-0.4	By-product of drinking water chlorination
Bromochloro-acetic Acid (BCAA)		0.3	2.2	0.4-3.3	By-product of drinking water chlorination
Bromodichloro-acetic Acid (BDCAA)		0.5	0.8	<0.5-2.3	By-product of drinking water chlorination
Chlorodibromo-acetic Acid (CDBAA)		0.3	<0.3	<0.3-0.7	By-product of drinking water chlorination

WATER QUALITY TESTING RESULTS

NON-REGULATED MICROBIALS MONITORED AT THE SOURCE*

Contaminant	Unit	MCLG	MCL	Highest Amount Detected	Range of Test Results (Low-High)	Likely Source
Cryptosporidium	#/L	0	TT	0.041	<0.041-0.041	Human or animal fecal waste

* **Found in source water only, not in treated water.**

IMPORTANT HEALTH INFORMATION

Cryptosporidium is a parasitic microbe found in surface waters throughout the U.S. Our monitoring indicates the presence of these organisms at very low levels in our source water but not in our treated water. Current test methods approved by the EPA do not allow us to determine if the organisms are dead or if they are capable of causing diease. Ingestion of *Cryptosporidium* may cause cryptosporidiosis, an abdominal infection. Symptoms of infection include nausea, diarrhea, and abdominal cramps.

Cryptosporidium must be ingested to cause disease, and it may be spread through means other than drinking water. Most healthy individuals can overcome the disease within a few weeks. However, immuno-compromised people, infants and small children, and the elderly 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. EPA/CDC guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* are available from the Safe Drinking Water Hotline at 800-426-4791.

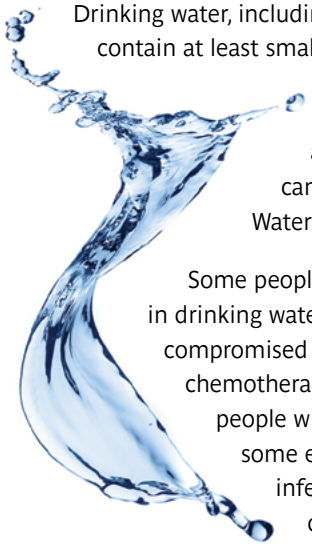
HOW WE TREAT YOUR WATER

Filter gallery pipes at our Lee Hall Water Treatment Plant.

Untreated water is pumped to our treatment plants, where it passes through screens, before aluminum sulfate (alum) and polymer are added. These chemicals cause tiny particles in the water to cling together (coagulation), making the particles easier to remove. After the water is clarified, ozone (disinfection) is added to kill micro-organisms such as bacteria and viruses. The water is then sent through filters to remove any remaining particles (filtration). Lime is added to adjust the pH, fluoride is added to prevent tooth decay, and zinc orthophosphate is added to control corrosion inside the pipes. Finally, chloramines, the secondary disinfectant, are added to maintain disinfection through the pipe system while the water travels to your home or business.

The brackish groundwater is pumped to the desalination plant located at our Lee Hall facility. Using a process called reverse osmosis, water is forced by high pressure through membranes that can remove the salt and other contaminants to produce very high quality water. When it is used, the finished water is blended with treated surface water and sent out to our customers.

PUBLIC HEALTH PRECAUTIONS



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 800-426-4791.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons, such as those with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants may be particularly at risk from infections. These people should seek advice about drinking water from their health care providers.

ABOUT LEAD

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. **We have not detected lead in the treated water tested monthly at either of Waterworks' treatment plants.**

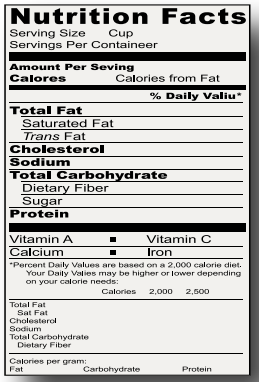
Lead in drinking water comes primarily from some materials associated with service lines and home plumbing. Waterworks is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components.

To reduce the potential for lead exposure, Waterworks adds lime during the treatment process to adjust the pH of the water and reduce corrosion of plumbing. We also add zinc orthophosphate to the water as a corrosion inhibitor. Zinc orthophosphate forms a protective layer on the inside of the pipes, which prevents lead and other metals from dissolving into the water. Lime and zinc orthophosphate are harmless to humans – especially in the quantities we use – and help prevent lead contamination.

Nonetheless, if your water has been sitting for several hours or longer, you can further minimize the potential for lead exposure by running cold water until it becomes as cold as it will get before using it for drinking or cooking. This could take from 30 seconds to 2 minutes or even longer. Waterworks and the health department recommend that you use only cold water for drinking, cooking, and especially for making baby formula. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure are available from the Safe Drinking Water Hotline at www.epa.gov/safewater/lead.

ADDITIONAL INFORMATION OF INTEREST

Sodium - The EPA has not set a standard for sodium in drinking water. However, sodium levels are usually low and unlikely to be a significant contribution to adverse health effects. The average level of sodium found in our treated water in 2019 was 12.7 mg/L, and the range was 6.9-42.5. Should you have a health concern, please contact your health care provider.


Nutrition Facts
Serving Size Cup
Servings Per Containeer
Amount Per Seving
Calores Calories from Fat
% Daily Valiu*
Total Fat
Saturated Fat
Trans Fat
Cholesterol
Sodium
Total Carbohydrate
Dietary Fiber
Sugar
Protein
Vitamin A ■ Vitamin C
Calcium ■ Iron
*Percent Daily Values are based on a 2,000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs:
Calories 2,000 2,500
Total Fat
Sat Fat
Cholesterol
Sodium
Total Carbohydrate
Dietary Fiber
Calories per gram:
Fat Carbohydrate Protein

Water Hardness - The EPA has not set a standard for hardness. Water treated by Newport News Waterworks is considered moderately hard (4-6 grains, which is equal to 70-120 mg/L as calcium carbonate or $CaCO_3$). In 2019 the average was 82 mg/L with a range of 58-112.

Fluoride - Fluoride is added to water to help prevent tooth decay. Newport News Waterworks adheres to drinking water regulations set by the EPA and guidance provided by the Virginia Department of Health (VDH). VDH has adopted the recommendation of 0.7 mg/l, set by the U.S. Department of Health and Human Services, as the optimum level of fluoride concentration in drinking water. This is the target Waterworks strives to achieve. Information about fluoridation, oral health, and current issues is available at www.cdc.gov/fluoridation.

Newport News Waterworks
DEPARTMENT

CONTACT US

If you have questions or concerns about your water or water quality, please contact Waterworks Customer Service.

Here is some important contact information to keep handy:

757-926-1000 8 a.m. - 5 p.m., Mon. - Fri.	wwcs@nnva.gov monitored 8 a.m. - 5 p.m., Mon. - Fri.
Walk-in Service Center 700 Town Center Drive (City Center at Oyster Point) 8 a.m. - 5 p.m., Mon. - Fri.	Walk-in Payment Center 2400 Washington Avenue (Newport News City Hall Annex) 8 a.m. - 4 p.m., Mon. - Fri.

Emergency Service: 757-234-4800
For emergencies only, after normal business hours, on weekends and holidays.

CONNECT WITH US

https://myservices.nnww.nnva.gov/
Use our online portal to manage your account, pay your water bill, sign up for paperless billing, and choose automatic payment options, report an outage, and request certain services.

www.nnva.gov/waterworks
Check our our website to see our extended water quality report, read fact sheets, and find other helpful information.

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Find us on Facebook to receive helpful tips, special announcements, and updates. Plus, we get to hear from you!

Ralph L. "Bo" Clayton III, Acting Director
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Michael L. Hotaling, P.E., Facilities Manager
Sherry L. Williams, Water Quality Manager

Waterworks Surface System Water Quality Report 2019 - Expanded Version

TERM	DEFINITION
AL	Action Level
Finished Water	Treated water, drinking water
ICR	Information Collection Rule
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
MRDL	Maxiumum Residual Disinfection Level
ND	Nephelometric Turbidity Units

TERM	DEFINITION
NTU	Nephelometric Turbidity Units
ppb	parts per billion or micrograms per liter (ug/L)
ppm	parts per million or milligrams per liter (mg/L)
pCi/L	picocuries per liter (a measure of radioactivity)
Source Water	Water prior entering the treatment plant, reservoir water
TT	Treatment Technique
VOC	Volatile Organic Compound

2019 REGULATED CONTAMINANTS OF THE DISTRIBUTION SYSTEM

CONTAMINANT, UNITS	MCLG	MCL	MAX CONC	RANGE	COMMENTS
Total Coliform	0	Presence of coliform bacteria in >5% of monthly samples	0.00%	0.0% - 0.0%	0 positive samples in 2018. 2202 samples collected 2019
E.Coli	0	A routine sample & a repeat sample are total coliform positive, and one is also fecal coliform or E.coli positive	0%		
Total Trihalomethane THM, ppb	0	80	20	2 -24	Max Conc- qt compliance avg at a specific site Range- individual samples collected in 2019
HAA(5)	0	60	19	2 - 22	Max Conc- qt compliance avg at a specific site Range- individual samples collected in 2019
Total Chlorine (Chloramines)	4	MRDL=4.0	3.2	<0.02 -5.3	Max Conc- mn compliance avg, includes 2018 data Range- individual samples collected in 2019
TOC Removal		TT (Compliance removal ratio)	1.32 (Min % removal)	0.68-1.69	Min Conc- qt compliance avg, includes 2018 data Range- weekly samples collected in 2019
Lead, ppb		AL=15 (>10% samples exceed AL)	<1.0 90% percentile	<1.0	2019 Sampling event; no sample exceeded the AL
Copper, ppm		AL=1.3 (>10% samples exceed AL)	0.062 90% percentile	0.008 - 0.319	2019 Sampling event, no samples exceeded the AL

2019 REGULATED HEALTH RISK CONTAMINANTS									
INORGANICS- REGULATED AT THE TREATMENT PLANT									
SUBSTANCE	**UNIT**	**MCLG**	**MCL**	**MAX CONC**	**RANGE**	**LIKELY SOURCE**	**MEETS EPA STANDARDS**	**VIOLATIONS?**	**COMMENTS**
Arsenic	ppb	none	50	<1			YES	NO	
Antimony	ppb	6	6	<1			YES	NO	
Barium	ppm	2	2	0.027	0.026 - 0.027	Erosion of natural deposits	YES	NO	
Beryllium	ppb	4	4	<1			YES	NO	
Cadmium	ppb	5	5	<1			YES	NO	
Chromium	ppb	100	100	<1			YES	NO	
Cyanide	ppb	200	200	<5			YES	NO	2018 data
Fluoride	ppm	4	4	0.93	0.66-0.93		YES	NO	Fluoride is added to promote strong teeth
Mercury	ppb	2	2	<0.2			YES	NO	
Nitrate	N, ppm	10	10	0.057	0.057	Erosion of natural deposits	YES	NO	
Nitrite	N, ppm	1	1	0.002	<0.001-0.002	Erosion of natural deposits	YES	NO	
Lead	ppb	n/a	15-AL	<1			YES	NO	2019 data
Selenium	ppb	50	50	<2			YES	NO	
Thallium	ppb	0.5	2	<1			YES	NO	
Bromate	ppb	0	10	<1			YES	NO	
Turbidity	NTU	n/a	TT	0.19	0.02 - 0.190		YES	NO	At least 100% of monthly samples had turbidity of $\leq$ 0.30 NTU

RADIOLOGICAL- REGULATED AT THE TREATMENT PLANT									
SUBSTANCE	**UNIT**	**MCLG**	**MCL**	**MAX CONC**	**RANGE**	**LIKELY SOURCE**	**MEETS EPA STANDARDS**	**VIOLATIONS?**	**COMMENTS**
Gross Alpha, inc Radon & Uranium	pCi/L	0	15	ND	ND	Erosion of natural deposits	YES	NO	2016 samples
Radium-228	pCi/L	0	5	0.6	<0.6-0.6		YES	NO	2016 samples
Beta emitters	pCi/L	0	4	2.5	1.4-2.5	Decay of natural & man-made deposits	YES	NO	2016 samples

2019 REGULATED NONHEALTH RISK CONTAMINANTS				
CONTAMINANT, UNITS	**MCLG**	**MCL**	**AVERAGE**	**RANGE**
pH	n/a	6.5-8.2	7.6	6.8-8.5
Chloride, ppm	n/a	250	21	15-75
Color, color units	n/a	15	<1	0-5
Copper, ppm	n/a	1.3	0.006	ND - 0.028
Iron, ppb	n/a	300	7	ND - 22
Manganese, ppb	n/a	50	10	ND - 38
Silver, ppb	n/a	100	<1	ND
Sulfate, ppm	n/a	500 (proposed)	38	30-48
Total Dissolved Solids, ppm	n/a	500	150	129-199
Zinc, ppm	n/a	5	0.205	0.164 - 0.245

2019 REGULATED HEALTH RISK CONTAMINANTS								
ORGANICS- REGULATED AT THE TREATMENT PLANT								
SUBSTANCE	**UNITS**	**MCLG**	**MCL**	**AVERAGE**	**RANGE**	**LIKELY SOURCE**	**MEETS EPA STANDARDS**	**VIOLATIONS?**
Regulated VOC	ppb							
Benzene	ppb	0	5	ND	ND		YES	NO
Carbon Tetrachloride	ppb	0	5	ND	ND		YES	NO
Chlorobenzene	ppb	100	100	ND	ND		YES	NO
o-Dichlorobenzene	ppb	600	600	ND	ND		YES	NO
p-Dichlorobenzene	ppb	75	75	ND	ND		YES	NO
1,2-Dichloroethane	ppb	0	5	ND	ND		YES	NO
1,1-Dichloroethylene	ppb	7	7	ND	ND		YES	NO
cis-1.2-Dichloroethylene	ppb	70	70	ND	ND		YES	NO
trans-1,2-Dichloroethylene	ppb	100	100	ND	ND		YES	NO
Dichloromethane	ppb	0	5	ND	ND		YES	NO
1,2-Dichlorpropane	ppb	0	5	ND	ND		YES	NO
Ethylbenzene	ppb	700	700	ND	ND		YES	NO
Styrene	ppb	100	100	ND	ND		YES	NO
Tetrachloroethylene	ppb	0	5	ND	ND		YES	NO
1,2,4-Trichlorobenzene	ppb	70	70	ND	ND		YES	NO
1,1,1-Trichloroethane	ppb	200	200	ND	ND		YES	NO
1,1,2-Trichloroethane	ppb	3	5	ND	ND		YES	NO
Trichloroethylene	ppb	0	5	ND	ND		YES	NO
Toluene	ppb	1	1	ND	ND		YES	NO
Vinyl Chloride	ppb	0	2	ND	ND		YES	NO
Xylene	ppb	10	10	ND	ND		YES	NO
38 Unregulated VOC	ppb	n/a	n/a	ND	ND		n/a	n/a
Chloroform	ppb	n/a	n/a	1.8	2.4 - 1.1	By-product of drinking water chlorination	n/a	n/a
Dichlorobromomethane	ppb	n/a	n/a	2	1.5 - 2.6	By-product of drinking water chlorination	n/a	n/a
Dibromochloromethane	ppb	n/a	n/a	1.2	1.2	By-product of drinking water chlorination	n/a	n/a
Bromoform	ppb	n/a	n/a	ND	ND-1	By-product of drinking water chlorination	n/a	n/a

2019 MISCELLANEOUS ANALYSES OF FINISHED WATER AT WATER TREATMENT PLANT					
CONTAMINANT, UNITS		**MCLG**	**MCL**	**AVERAGE**	**RANGE**
Alkalinity	CaCO3 ppm	n/a	n/a	53	35-74
Aluminum	ppb	n/a	50-200	<25	<25 - 211
Ammonia	ppm	n/a	n/a	0.7	0.526-1.04
Bromide	ppb	n/a	n/a	<0.010	<0.010 - 0.134
Calcium	ppm	n/a	n/a	30	18-42
Hardness	CaCO3 ppm	n/a	n/a	82	58-112
Lead	ppm	n/a	n/a	<1	<1
Magnesium	ppm	n/a	n/a	1.4	0.96-3.57
Molybdate	ppb	n/a	n/a	<1	<1
Nickel	ppb	n/a	n/a	<1	<1
Ortho-Phosphorus	P, ppm	n/a	n/a	0.229	0.198-0.362
Potassium	ppm	n/a	n/a	1.3	0.8-3.4
Silica	ppm	n/a	n/a	3.5	1.3-6.6
Sodium	ppm	n/a	n/a	12.7	6.9-42.5
Specific Conductance	uhmo/cm	n/a	n/a	245	199-359

2019 MICROBIAL MONITORING OF SOURCE WATER					
SUBSTANCE	**UNIT**	**MCLG**	**MCL**	**MAX CONC**	**RANGE**
Giardia	#/L	0	n/a	0.166	<0.041 - 0.166
Cryptosporidium	#/L	0	TT	0.041	<0.041 - 0.041

UNREGULATED CONTAMINANT MONITORING REGULATION-4 (URMC4)				
UNREGULATED CONTAMINATES	**UNITS**	**MRL**	**MAX**	**RANGE**
UCMR4- TRACE METALS				
Geranium	µg/L	0.3	<0.3	<0.3
Manganese	µg/L	0.4	9.6	2.9 - 24.1
UCMR- PESTICIDES AND PESTICIDE MANUFACTURING BYPRODUCT				
alpha-Hexachlorocyclohexane	ug/L	0.01	<0.01	<0.01
Chlorpyrifos	ug/L	0.03	<0.03	<0.03
Dimethipin	ug/L	0.20	<0.02	<0.02
Ethoprop	ug/L	0.03	<0.03	<0.03
Oxyfluorfen	ug/L	0.05	<0.05	<0.05
Profenofos	ug/L	0.3	<0.3	<0.3
Tebicomazole	ug/L	0.2	<0.2	<0.2
Permethrin, cis & Tran	ug/L	0.04	<0.04	<0.04
Tribufos	ug/L	0.07	<0.07	<0.07
UCMR4- SEMI-VOLATILE ORGANIC COMPOUNDS				
Buylated hydroxyanisole	ug/L	0.03	<0.03	<0.03
o-Toluidine	ug/L	0.007	<0.007	<0.007
Quinoline	ug/L	0.02	<0.02	<0.02
UCMR4- ORGAIC ALCOHOLS				
1-Butanol	ug/L	2.0	<2.0	<2.0
2-Methoxyethanol	ug/L	0.4	<0.4	<0.4
2-Propen-1-ol	ug/L	0.5	<0.5	<0.5
UCMR4- MICROCYSTIN CONGENERS AND NODULARIN				
Microcyctin-LA	µg/L	0.008	<0.008	<0.008
Microcyctin-LF	µg/L	0.006	<0.006	<0.006
Microcyctin-LR	µg/L	0.02	<0.02	<0.02
Microcyctin-LY	µg/L	0.009	<0.009	<0.009
Microcyctin-RR	µg/L	0.006	<0.006	<0.006
Microcyctin-YR	µg/L	0.02	<0.02	<0.02
Nodularin	µg/L	0.005	<0.005	<0.005

UCMR4- CYLINDROSPERMOPSIN AND ANATOXIN				
Anatoxin-a	ug/L	0.03	<0.03	<0.03
Clyindrospermopsin	ug/L	0.09	<0.09	<0.09
UCMR4- TOTAL MICROCYSTIN				
Total Microcystins	µg/L	0.3	<0.3	<0.3
UCMR4- HALOACETIC ACIDS				
Monocloroacetic Acid (MCAA)	µg/L	2.0	2.9	<2.0 - 2.9
Monobromoacetic Acid (MBAA)	µg/L	0.3	0.3	<0.3 - 0.3
Dicloroacetic Acid (DCAA)	µg/L	0.2	27.1	1.6 - 27.1
Trichloroacetic Acid (TCAA)	µg/L	0.5	11.7	0.7 - 11.7
Dibromoacetic Acid (DBAA)	µg/L	0.3	0.4	<0.3 - 0.4
Bromochloroacetic Acid (BCAA)	µg/L	0.3	3.3	0.4 - 3.3
Bromodichloroacetic Acid (BDCAA)	µg/L	0.5	2.3	<0.5 - 2.3
Chlorodibromoacetic Acid (CDBAA)	µg/L	0.3	0.7	<0.3 - 0.7
Tirbromoacetic Acid (TBAA)	µg/L	2.0	<2.0	<2.0

Annual Water Quality Report

Summarizing test results from 2019

Newport News Waterworks Department

Lightfoot System

ABOUT THIS REPORT

This annual water quality report or "Consumer Confidence Report" is written, prepared and distributed by the City of Newport News Waterworks Department (Waterworks) as required by the Safe Drinking Water Act. It is reviewed and approved by the Virginia Department of Health, Office of Drinking Water in Richmond. This report explains where your water comes from, what our tests show about it and other things you should know about your drinking water.

The report provides details about the water you drink every day as a customer of Newport News Waterworks. We test our water for the presence of more than 100 substances, and this report includes a chart showing you the levels of several regulated and non-regulated substances we detected in 2019. Our goal is to meet your need for a clean, safe supply of drinking water at a reasonable cost, while providing long-term management of our water resources.

This report is available on our website at www.nnva.gov/waterqualityreport, where you also can find the water quality report for our surface water system and additional test results for both systems. A paper copy of this report is available at the Williamsburg Regional Library in Norge and at in our walk-in services lobby in Newport News. If you would like to receive a copy of this report in the mail, please call Waterworks Customer Service at 757-926-1000.

INSIDE

HOW CAN I GET INVOLVED?

Since Waterworks is a department of the City of Newport News, major decisions about your drinking water are made by Newport News City Council. They meet on the second and fourth Tuesdays of each month at 7:00 pm, and you are welcome to attend and participate. These meetings are broadcast live on the Newport News City Channel (in Newport News - Cox channel 48 and Verizon FIOS channel 19) and streamed live on Facebook at www.facebook.com/NewportNewsTV. They also can be viewed live or on-demand by all customers in our service area at www.nnva.gov/nntv.

YOUR WATER UTILITY

Newport News Waterworks serves as a regional water provider for five jurisdictions: Newport News, Hampton, Poquoson, York County and part of James City County. We are committed to providing a reliable supply of high quality drinking water to our customers. Our drinking water is treated and tested using state-of-the-art equipment and advanced procedures, and it meets or exceeds state and federal standards. The bottom line: The quality of your water is excellent.

HOW WE TEST YOUR WATER

To ensure that the water provided to you is safe to drink, the Virginia Department of Health and the EPA set limits on the amounts of certain substances in water provided by public water systems. We routinely monitor for substances in your drinking water according to these federal and state laws. (The U.S. Food and Drug Administration is responsible for setting these limits on bottled water.) The table on pages 4 and 5 includes the monitoring results for samples collected by Newport News Waterworks in 2016, 2018 and 2019. Every regulated substance that was detected in the water, even in the smallest amounts, is listed in the table.

The table contains the name of each substance, the highest level allowed by regulation (MCL), the ideal goals for public health (MCLG), the amount detected, the usual sources of such contamination, and whether or not Waterworks meets the set regulation. For help understanding the table, please see the definitions on the next page and the footnotes at the bottom of the table. More information about contaminants and potential health effects can be obtained by calling the EPA's toll free Safe Drinking Water Hotline at 1-800-426-4791.

An expanded version of the tables in this report, which lists additional test results, can be found on our website at www.nnva.gov/waterqualityreport. (Be sure to view the Lightfoot Well System Report). A second water quality report is available on our website for our customers on the Lower Peninsula, who are served by our surface water supply system. To request that copies of these reports be mailed to you, call Newport News Waterworks Customer Service at 757-926-1000.

ADDITIONAL INFORMATION OF INTEREST

Sodium - The EPA has not set a standard for sodium in drinking water. However, sodium levels are usually low and unlikely to be a significant contribution to adverse health effects. The average level of sodium found in our treated water in 2018 was 51 mg/L, and the range was 35-66. Should you have a health concern, please contact your health care provider.

Fluoride - No additional fluoride is added to your well water. Any fluoride detected is naturally occurring.

KEY TERMS

We've defined these water-quality terms, unique to the water industry, to help you better understand the test results on the following pages.

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

MCL: Maximum Contaminant Level - 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.

MCLG: Maximum ContaXXmnant 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.

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

MRDLG: Maximum Residual Disinfectant Level Goal - 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.

MRL: Minimum Reporting Level - Estimate of the lowest concentration of a compound that laboratories would report as a detection.

ND: Not detected - Does not equate to zero, but refers to an amount below analytical reporting limits.

pCi/L: Picocuries per liter - A measure of radioactivity. EPA considers 50 pCi/L to be the level of concern for beta particles.

ppb: Parts per billion or micrograms per liter (µg/L). Equivalent to one penny in $10 million.

ppm: Parts per million or milligrams per liter (mg/L). Equivalent to one penny in $10 thousand.

ppt: Parts per trillion or nanograms per liter [ng/L]. Equivalent to one penny in $10 billion.

TT: Treatment Technique - A required process intended to reduce the level of a contaminant in drinking water.

WATER QUALITY TESTING RESULTS

REGULATED SUBSTANCES

Contaminant and Unit of Measurement	EPA Ideal Goal (MCLG)	Highest EPA Allowed Level (MCL)	Max Detected Level	Range Detected (Low-High)	Meets State & Federal Standards	Likely Source	Year Tested
LEAD AND COPPER							
Lead (ppb)	0	AL = 15	1.18[1]	<1.0-2.15	YES	Corrosion of household plumbing	2019
Copper (ppm)	1.3	AL = 1.3	0.038[1]	0.012-0.062	YES	Corrosion of household plumbing	2019
INORGANICS - REGULATED AT THE WELLS							
Fluoride (ppm)	4	4	0.76	0.49-0.76	YES	Fluoride occurs naturally in groundwater	2018
Nitrate (ppm)	10	10	0.091	ND-0.091	YES	Erosion of natural deposits	2019
REGULATED CONTAMINANTS IN THE DISTRIBUTION SYSTEM							
Total Trihalomethanes THM (ppb)	N/A	80	34	5-34	YES	By-product of drinking water chlorination	2019
Haloacetic Acids HAA (ppb)	N/A	60	9	0-9	YES	By-product of drinking water chlorination	2019
DISINFECTANTS							
Free Chlorine (ppm)	MRDLG = 4	MRDL = 4	Avg = 1.40[2]	0.22-1.75[2]	YES	Disinfectant added to control microbes	2018 & 2019
RADIOLOGICAL - REGULATED AT THE WELLS							
Alpha Emitters (pCi/L)	0	15	0.8	ND-0.8	YES	Erosion of natural deposits	2016
Beta/Photon Emitters (pCi/L)	0	50	7.6	5.3-7.6	YES	Decay of natural and man-made deposits	2016
Radium - 228 (pCi/L)	0	5	0.6	ND-0.6	YES	Occurs naturally in rock, soil, water, plants and animals	2016

Footnotes:

(1) At least 90% of the samples were at or below this level. None of the individual samples exceeded the Action Level. Our low lead and copper levels require us to only test every three years.

(2) The highest detected level is based on a running annual average, which includes data from 2018. The range numbers are the results of individual samples collected in 2019.

WATER QUALITY TESTING RESULTS

UNREGULATED SUBSTANCES

Contaminant and Unit of Measurement	Max Detected Level	Range Detected (Low-High)	Likely Source	Year Tested
UNREGULATED ORGANICS - MONITORED AT THE WELL SITE				
Chloroform (ppb)	2.4	1.8-2.4	By-product of chlorination	2019
Dichlorobromomethane (ppb)	2.1	1.5-2.1	By-product of chlorination	2019
Dibromochloromethane (ppb)	1.5	1.2-1.5	By-product of chlorination	2019

Note: MCLs are set at very stringent levels. To experience the possible health effects described for many regulated contaminants, a person would have to drink two liters of water at the MCL level every day for a lifetime to have a one-in-a-million chance of having a possible health effect.

HOW HARD IS MY WATER?

No EPA standard is set. Water from the Lightfoot Well System is considered slightly hard at an average of 37 mg/L in a range of 20-54 mg/L as $CaCO_3$ or calcium carbonate.

WHERE YOUR WATER COMES FROM

Your drinking water comes from fresh water wells located in the Lightfoot area. These wells provide, on average, a little more than 360,000 gallons of water per day to our Lightfoot customers.

SOURCE WATER ASSESSMENT

The Virginia Department of Health (VDH) conducted its Source Water Assessment of the Lightfoot Wells in 2002. Using the criteria developed by the state in its approved Source Water Assessment Program, the VDH determined the susceptibility to contamination was high for one of the two wells. One way our well water customers can protect their drinking water is by keeping septic systems in good repair and ensure they are functioning properly.

VDH VIRGINIA DEPARTMENT OF HEALTH
Protecting You and Your Environment

The assessment report consists of maps showing the Source Water Assessment area; inventory of known land use activities, potential conduits to groundwater, and potential sources of contamination of concern; susceptibility explanation chart; and definitions of key terms. The Source Water Assessment is available from Waterworks by contacting Customer Service at 757-926-1000.

HOW WE TREAT YOUR WATER

Groundwater usually requires little or no treatment. Waterworks adds a small amount of chlorine to your well water for disinfection purposes and to ensure a disinfection "residual" throughout the distribution system. The addition of chlorine to your water helps us protect public health and to best comply with the U.S. Environmental Protection Agency's (EPA's) 2006 Groundwater Rule (www.epa.gov).

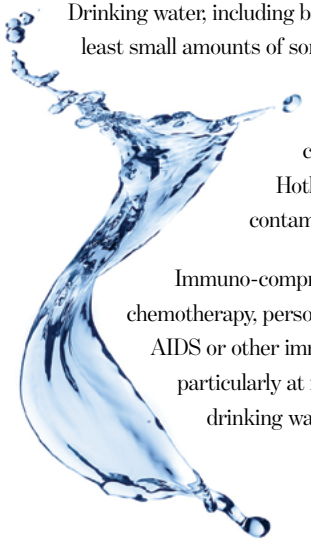
MORE ABOUT SOURCE WATER

WHAT'S IN MY WATER BEFORE IT'S TREATED?

Generally speaking, 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 radioactive material and can pick up substances resulting from the presence of animals or from human activity. Substances that may be present in 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 runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- **Pesticides and herbicides** that may come from a variety of sources such as agriculture, stormwater runoff, and residential uses.
- **Organic chemical contaminants**, including synthetic and volatile organics, are by-products of industrial processes and petroleum production, and also can come from gas stations, urban stormwater runoff, and septic systems.
- **Radioactive contaminants**, which can be naturally-occurring or be the result of oil and gas production and mining activities.

IMPORTANT HEALTH INFORMATION



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 800-426-4791. Some people may be more vulnerable to contaminants in drinking water than the general population.

Immuno-compromised persons such as those with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants may be particularly at risk from infections. These people should seek advice about drinking water from their health care providers.

ABOUT LEAD

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. **We have not detected lead in the Lightfoot System water that we tested at the wells**. Lead in drinking water comes primarily from some materials and components associated with service lines and home plumbing. Newport News Waterworks is responsible for providing high quality drinking water but cannot control the variety of materials used in plumbing components.

If your water has been sitting for several hours or longer, you can minimize the potential for lead exposure by running cold water until it becomes as cold as it will get before using it for drinking or cooking. This could take 30 seconds to 2 minutes or longer. Waterworks and the health department recommend that you use only cold water for drinking, cooking, and especially for making baby formula.

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 any exposure is available from the Safe Drinking Water Hotline (1-800-426-4791) or at epa.gov/safewater/lead.

Newport News Waterworks
DEPARTMENT

CONTACT US

If you have questions or concerns about your water or water quality, please contact Waterworks Customer Service.

Here is some important contact information to keep handy:

757-926-1000 8 a.m. - 5 p.m., Mon. - Fri.	wwcs@nnva.gov monitored 8 a.m. - 5 p.m., Mon. - Fri.
Walk-in Service Center 700 Town Center Drive (City Center at Oyster Point) 8 a.m. - 5 p.m., Mon. - Fri.	Walk-in Payment Center 2400 Washington Avenue (Newport News City Hall Annex) 8 a.m. - 4 p.m., Mon. - Fri.

Emergency Service: 757-234-4800
For emergencies only, after normal business hours, on weekends and holidays.

CONNECT WITH US

https://myservices.nnww.nnva.gov
Use our online portal to manage your account, pay your water bill, sign up for paperless billing, and choose automatic payment options, report an outage, and request certain services.

www.nnva.gov/waterworks
Check our our website to see our extended water quality report, read fact sheets, and find other helpful information.

www.facebook.com/nnwaterworks
Find us on Facebook to receive helpful tips, special announcements, and updates. Plus, we get to hear from you!

Ralph L. "Bo" Clayton III, Acting Director
Yann A. Le Gouellec, PhD, P. E., Assistant Director
Michael L. Hotaling, P. E., Facilities Manager
Sherry L. Williams, Water Quality Manager

Waterworks Lightfoot System Water Quality Report 2019 - Expanded Version

TERM	DEFINITION
AL	Action Level
Finished Water	Treated water, drinking water
ICR	Information Collection Rule
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
MRDL	Maxiumum Residual Disinfection Level
ND	Nephelometric Turbidity Units

TERM	DEFINITION
NTU	Nephelometric Turbidity Units
ppb	parts per billion or micrograms per liter (ug/L)
ppm	parts per million or milligrams per liter (mg/L)
pCi/L	picocuries per liter (a measure of radioactivity)
Source Water	Water prior entering the treatment plant, reservoir water
TT	Treatment Technique
VOC	Volatile Organic Compound

2018 REGULATED CONTAMINANTS OF THE LIGHTFOOT DISTRIBUTION SYSTEM

CONTAMINANT, UNITS	MCLG	MCL	MAX CONC	RANGE	YR TESTED	COMMENTS
Total Coliform	0	Presence of coliform bacteria in >1 of monthly samples	0.00%	0%	2018	0 positive sample, 101 samples analyzed in 2019
E.Coli	0	A routine sample & a repeat sample are total coliform positive, and one is also fecal coliform or E.coli positive	0%	0%	2018	0 positive sample, 101 samples analyzed in 2019
Total Trihalomethane THM, ppb	0	80	34	5 - 34	2019	
HAA(5)	0	60	9	0 - 9	2019	
Free Chlorine	4	MRDL=4.0	1.40	0.22-1.75	2018-2019	Max Conc- mn compliance avg, includes 2018 data Range- individual samples collected in 2019
Lead, ppb		AL=15 (>10% samples exceed AL)	1.18 90% percentile	<1.0 - 2.15	2019	No sample exceeded the AL
Copper, ppm		AL=1.3 (>10% samples exceed AL)	0.038 90% percentile	0.012 - 0.062	2019	No sample exceeded the AL

2018 REGULATED HEALTH RISK CONTAMINANTS

METALS- REGULATED AT THE WELLS

SUBSTANCE	UNIT	MCLG	MCL	MAX CONC	RANGE	LIKELY SOURCE	MEETS EPA STANDARDS	VIOLATIONS?	YR TESTED	COMMENTS
Arsenic	ppb	none	50	<2	<2		YES	NO	2018	
Barium	ppb	2000	2000	<1.0	<1.0	Erosion of natural deposits	YES	NO	2018	
Cadmium	ppb	5	5	<1.0	<1.0		YES	NO	2018	
Chromium	ppb	100	100	<1.0	<1.0		YES	NO	2018	
Lead	ppb	n/a	15-AL	<1.0	<1.0		YES	NO	2018	
Mercury	ppb	2	2	<0.2	<0.2		YES	NO	2016	
Selenium	ppb	50	50	<1.0	<1.0		YES	NO	2018	
Thallium	ppb	0.5	2	<1.0	<1.0		YES	NO	2018	
Antimony	ppb	6	6	<1.0	<1.0		YES	NO	2018	
Beryllium	ppb	4	4	<1.0	<1.0		YES	NO	2018	

INORGANICS- REGULATED AT THE WELLS

SUBSTANCE	UNIT	MCLG	MCL	MAX CONC	RANGE	LIKELY SOURCE	MEETS EPA STANDARDS	VIOLATIONS?	YR TESTED	COMMENTS
Fluoride	ppm	4	4	0.76	0.49-0.76		YES	NO	2018	
Nitrate	N, ppm	10	10	0.091	ND-0.091	Erosion of natural deposits	YES	NO	2019	
Nitrite	N, ppm	1	1	<0.001	<0.001	Erosion of natural deposits	YES	NO	2018	

RADIOLOGICAL- REGULATED AT THE WELLS

SUBSTANCE	UNIT	MCLG	MCL	MAX CONC	RANGE	LIKELY SOURCE	MEETS EPA STANDARDS	VIOLATIONS?	YR TESTED	COMMENTS
Alpha emitters	pCi/L	0	15	0.8	ND-0.8	Erosion of natural deposits	YES	NO	2016	
Beta emitters	pCi/L	0	50	7.6	5.3-7.6	Decay of natural & man-made deposits	YES	NO	2016	
Radium-228	pCi/L	0	5	0.6	ND-0.6		YES	NO	2016	

2018 REGULATED NONHEALTH RISK CONTAMINANTS					
REGULATED AT THE WELLS					
CONTAMINANT, UNITS	**MCLG**	**MCL**	**AVERAGE**	**RANGE**	**YR TESTED**
pH	n/a	6.5-8.5	8.1	8.1	2018
Chloride, ppm	n/a	250	8.2	7.6 - 8.6	2018
Color, color units	n/a	15	0	0	2018
Copper;ppb	n/a	1300	<1	<1	2018
Iron, ppb	n/a	300	<10	<10	2018
Manganese, ppb	n/a	50	<1	<1	2018
Sulfate, ppm	n/a	500 (proposed)	6.3	6.2 - 6.4	2018
Total Dissolved Solids, ppm	n/a	500	229	206 - 252	2018
Zinc, ppm	n/a	5	<0.001	<0.001	2018

2018 MISCELLANEOUS ANALYSES						
CONTAMINANT	**UNITS**	**MCLG**	**MCL**	**AVERAGE**	**RANGE**	**YR TESTED**
Alkalinity	CaCO3 ppm	n/a	n/a	157	135 - 179	2018
Aluminum	ppb	n/a	50-200	<50	<50	2018
Ammonia	ppm	n/a	n/a	<0.030	<0.030	2018
Calcium Hardness	CaCO3 ppm	n/a	n/a	27	13-42	2018
Hardness	CaCO3 ppm	n/a	n/a	37	20-54	2018
Lead	ppm	n/a	n/a	<0.001	<0.001	2018
Nickel	ppb	n/a	n/a	<1	<1	2018
Sodium	ppm	n/a	n/a	51	35-66	2018
Specific Conductance	uhmo/cm	n/a	n/a	386	337 - 434	2018

2016 REGULATED HEALTH RISK CONTAMINANTS									
ORGANICS- REGULATED AT THE POINT OF ENTRY									
SUBSTANCE	UNITS	MCLG	MCL	MAX CONC	RANGE	LIKELY SOURCE	MEETS EPA STANDARDS	VIOLATIONS?	YR TESTED
Regulated VOC	ppb								
Benzene	ppb	0	5	ND	ND		YES	NO	2019
Carbon Tetrachloride	ppb	0	5	ND	ND		YES	NO	2019
Chlorobenzene	ppb	100	100	ND	ND		YES	NO	2019
o-Dichlorobenzene	ppb	600	600	ND	ND		YES	NO	2019
p-Dichlorobenzene	ppb	75	75	ND	ND		YES	NO	2019
1,2-Dichloroethane	ppb	0	5	ND	ND		YES	NO	2019
1,1-Dichloroethylene	ppb	7	7	ND	ND		YES	NO	2019
cis-1.2-Dichloroethylene	ppb	70	70	ND	ND		YES	NO	2019
trans-1,2-Dichloroethylene	ppb	100	100	ND	ND		YES	NO	2019
Dichloromethane	ppb	0	5	ND	ND		YES	NO	2019
1,2-Dichlorpropane	ppb	0	5	ND	ND		YES	NO	2019
Ethylbenzene	ppb	700	700	ND	ND		YES	NO	2019
Styrene	ppb	100	100	ND	ND		YES	NO	2019
Tetrachloroethylene	ppb	0	5	ND	ND		YES	NO	2019
1,2,4-Trichlorobenzene	ppb	70	70	ND	ND		YES	NO	2019
1,1,1-Trichloroethane	ppb	200	200	ND	ND		YES	NO	2019
1,1,2-Trichloroethane	ppb	3	5	ND	ND		YES	NO	2019
Trichloroethylene	ppb	0	5	ND	ND		YES	NO	2019
Toluene	ppb	1	1	ND	ND		YES	NO	2019
Vinyl Chloride	ppb	0	2	ND	ND		YES	NO	2019
Xylene	ppb	10	10	ND	ND		YES	NO	2019
38 Unregulated VOC	ppb	n/a	n/a	ND	ND		n/a	n/a	2019
Chloroform	ppb	n/a	n/a	2.4	1.8-2.4	By-product of drinking water chlorination	n/a	n/a	2019
Dichlorobromomethane	ppb	n/a	n/a	2.1	1.5-2.1	By-product of drinking water chlorination	n/a	n/a	2019
Dibromochloromethane	ppb	n/a	n/a	1.5	1.2-1.5	By-product of drinking water chlorination	n/a	n/a	2019
Bromoform	ppb	n/a	n/a	ND	ND	By-product of drinking water chlorination	n/a	n/a	2019