

»»» 2019 WATER QUALITY REPORT »»»



Improving Lives. Building Community.®

# 2019 JEA ANNUAL WATER QUALITY REPORT

We are pleased to present this year's report.

Each year, JEA performs more than 45,000 tests on your drinking water. This publication provides a comprehensive summary of all the parameters that were found to be present in the most recent sampling period. As the data in this report indicates, JEA's water supply, the Floridan aquifer, is an excellent source of high-quality water. The citizens of Jacksonville and Northeast Florida are fortunate to have a drinking water resource that is so pristine and pure.

In order to sustain and protect this valuable resource, JEA continually invests in the management of our water source to maintain an abundant supply of fresh water. We constantly monitor and optimize system operations to ensure the most reliable and cost-effective method of delivering your drinking water.

Our state-of-the-art technology monitors our water supply grid to bring fresh, clean water to your home. We work hard to help our customers learn how to conserve Northeast Florida's most precious resource, the Floridan aquifer, so that we may continue to benefit from it for generations to come.



We collect & analyze

## 45,000

water samples throughout our service area during the year to ensure we're providing our community with safe, clean drinking water.

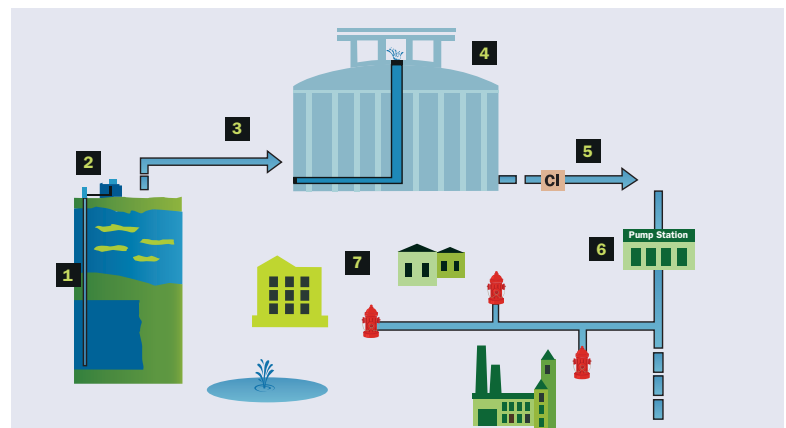
## FDEP SOURCE WATER ASSESSMENTS

In 2019, the Florida Department of Environmental Protection performed Source Water assessments to identify potential sources of contamination in the vicinity of JEA wells. Potential contamination sources include landfills, fuel storage tanks, dry cleaning facilities and wastewater disposal areas. Visit [fdep.dep.state.fl.us/swapp/](http://fdep.dep.state.fl.us/swapp/) to view assessment results online.

System	# of Potential Sources	Susceptibility Level
Major Grid	113	Low-Moderate
Mayport	2	Low
Lofton Oaks Grid	7	Low
Ponte Vedra Grid	2	Low
Ponce de Leon Grid	5	Low-Moderate

## WATER SYSTEM PROCESS

The JEA drinking water system consists of wells, water treatment plants, the distribution grid of pipelines, and the customers' meters. We have over 130 wells that withdraw water from the Floridan aquifer, about 1,000 feet below land surface. The fresh, clean water is pumped from the well fields to one of 38 water treatment plants, where it then flows through an aerator to remove the sulfur (rotten egg) odor. The water leaves the reservoirs and is disinfected with chlorine per health regulations before it enters over 4,600 miles of water lines for distribution to our customers. Ozone is also utilized at a couple plants for sulfide removal and to improve taste and odors.



- 1. The Florida Aquifer** is the source of water in Northeast Florida. JEA utilizes this source to provide potable (drinking) water to our customers. The aquifer is a gigantic underground river that courses through limestone formations many hundreds of feet underground.
- 2. Deep Well Turbine Pumps** are used to draw the water from the aquifer and deliver it through **3. Well Headers** to the **4. Water Treatment Plant**. At the plant, the water is aerated and stored until there is demand for the water. As needed, the water is chlorinated and pumped into the system by the plant's service pumps. **5. Transmission Mains** carry the potable water throughout the many miles of service area and ultimately deliver the water through **6. Distribution Mains**, service connections, and water meters to our customers.



## JEA'S STATE-OF-THE-ART WATER MONITORING SYSTEM

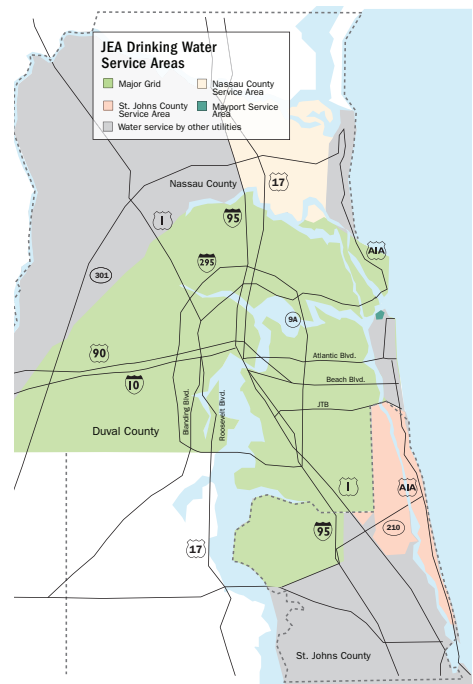
JEA has a state-of-the-art operations network in place, called Supervisory Control and Data Acquisition (SCADA), which enables us to monitor our water supply system and bring you an uninterrupted supply of fresh, clean water to your home. SCADA is a technology that allows us to remotely control and monitor conditions at our water plants 24 hours a day. An operator monitors and controls the treatment facilities through a centralized computer system that shows a representation of the water plant system instrumentation and equipment indicating pressure, flow, reservoir levels, chlorine level, and pH, as well as critical alarms.



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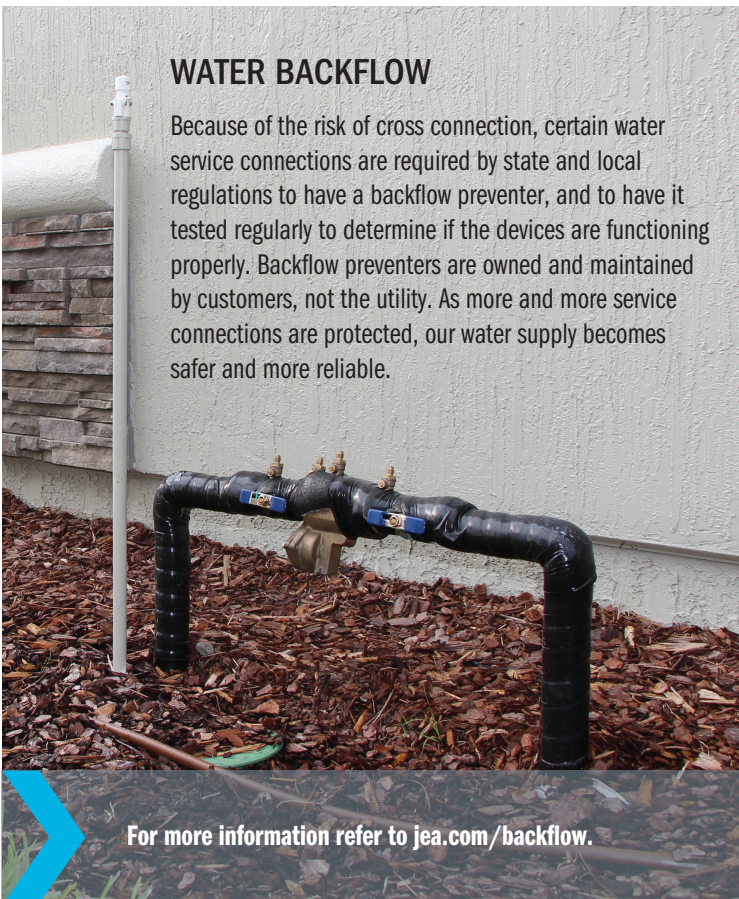
## JACKSONVILLE'S DRINKING WATER SERVICE AREAS

JEA's Major Grid provides water to most of Duval County and the northwest portion of St. Johns County. JEA also supplies water to the Yulee area, Mayport, and from Ponte Vedra south to Vilano Beach along A1A. Also along the Intracoastal Waterway in Palm Valley there is one small area that gets water through an interconnection with the St. Johns County Utility Department. Our grid arrangements provide reliable water service backup as needed, particularly during emergencies or periods of routine plant maintenance shutdowns.



## WATER BACKFLOW

Because of the risk of cross connection, certain water service connections are required by state and local regulations to have a backflow preventer, and to have it tested regularly to determine if the devices are functioning properly. Backflow preventers are owned and maintained by customers, not the utility. As more and more service connections are protected, our water supply becomes safer and more reliable.



For more information refer to [jea.com/backflow](http://jea.com/backflow).

## WATER HARDNESS LEVELS

Water is described as “hard” when it contains high levels of dissolved minerals—primarily calcium and magnesium. While these naturally occurring compounds can leave spots on dishes and windows (easily removed with white vinegar), they do not present a health risk. In fact, both calcium and magnesium are commonly taken as health supplements.

The table indicating the total hardness found in all JEA-serviced zip codes can be found at [jea.com/hardness](http://jea.com/hardness).

## JEA PURIFIED WATER PROGRAM

To ensure sustainable water supply for the future, JEA is evaluating water purification as one option for aquifer recharge. In cooperation with the St. Johns River Water Management District, Project H2.0 will be a demonstration facility to show the ultra-high purity and cost effectiveness of reclaimed water purification. The 1 million gallon per day facility will have extensive visitor engagement and demonstrate how ultrafiltration, low-pressure reverse osmosis, and advanced oxidation can treat reclaimed water to pure drinking water levels for future use.



Project H2.0 treatment system technology involves ultrafiltration, low-pressure reverse osmosis and advanced oxidation.

## RECLAIMED WATER

JEA's award-winning reclaimed water program is a vital tool in our community's efforts to protect the St. Johns River and sustain the Floridan aquifer. In 2019, JEA produced on average 19 million gallons per day of reclaimed water to meet the irrigation needs of our customers while also protecting the environment. That's water that we don't have to pull from the Floridan aquifer. At the same time, it reduces the amount of treated wastewater discharged into the St. Johns River.







JEA produced on average  
**19 million gallons**  
 per day of reclaimed water.



## WATER CONSERVATION TIPS


Water conservation is an integral part of JEA's Total Water Management Plan. It will help us ensure a sustainable supply of fresh water. Here are some simple and sensible conservation tips everyone should follow.

### INSIDE YOUR HOME

-  Fix all leaks, especially toilet leaks.
-  Use efficient shower heads and lowflow toilets.
-  Run the washer and dishwasher only when full.
-  Turn off the water when brushing your teeth.





### OUTSIDE YOUR HOME

-  Plant Florida Native plants that do well with less water.
-  Redesign your lawn and garden to require less watering.

-  Know and follow mandated watering days. An estimated 40 to 50 percent of the water JEA provides our customers is used outdoors, primarily for irrigation.

-  Don't water when it's windy.

### FOR YOUR BUSINESS

-  Make sure your irrigation system is properly setup and maintained.
-  Install rain sensors.
-  Place faucet aerators in sinks used for hand washing.
-  Use high-efficiency toilets and urinals.

For more information on JEA's water quality tests or to request a report, please contact us.

**Phone:** (904) 665-6000  
**Email:** [WaterQuality@jea.com](mailto:WaterQuality@jea.com)  
**Online:** [jea.com/WQR2019](http://jea.com/WQR2019)

**By mail:** JEA Water Quality  
 1002 N. Main St.  
 Jacksonville, FL 32206

**In person:** Printed copies are available at JEA's Downtown Customer Service Center and at every branch of the Jacksonville Public Library. JEA's board meetings are held on the third Tuesday of every month at JEA's downtown offices, located at 21 W. Church St., Jacksonville. The public is invited to attend.



## WATER QUALITY MONITORING RESULTS

System	Major Grid			Mayport			Lofton Oaks Grid			Ponce de Leon Grid		
	Sample Date	Level Detected	Range of Results	Sample Date	Level Detected	Range of Results	Sample Date	Level Detected	Range of Results	Sample Date	Level Detected	Range of Results
<b>Microbiological Contaminants</b>												
E. coli	01/19-12/19	1	ND-1	ND	ND	ND	ND	ND	ND	ND	ND	ND
E. coli (at the ground water source)	01/19-12/19	1	ND-1	ND	ND	ND	ND	ND	ND	ND	ND	ND
<b>Radioactive Contaminants</b>												
Alpha emitters (pCi/L)	02/17	7.07	ND-7.07	ND	ND	ND	ND	ND	ND	03/18	2.9	ND-2.9
Radium 226+228 or combined radium (pCi/L)	02/17	1.296	ND-1.296	03/18	0.09	N/A	02/17	0.748	ND-0.748	03/18	1.9	0.6-1.9
<b>Inorganic Contaminants</b>												
Antimony (ppb)	02/17	0.495	ND-0.495	ND	ND	ND	ND	ND	ND	ND	ND	ND
Barium (ppm)	02/17	0.0341	0.0142-0.0341	03/18	0.028	NA	02/17	0.0329	0.0281-0.0329	03/18	0.0185	0.0152-0.0185
Cadmium (ppb)	02/17	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium (ppb)	02/17	0.706	ND-0.706	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoride (ppm)	02/17	0.769	0.385-0.769	03/18	0.688	N/A	02/17	0.618	0.561-0.618	03/18	0.987	0.934-0.987
Lead (point of entry) (ppb)	02/17	1.95	ND-1.95	ND	ND	ND	02/17	2.18	ND-2.18	03/18	0.3	ND-0.3
Mercury (ppb)	02/17	0.0063	ND-0.0063	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel (ppb)	02/17	2.11	ND-2.11	ND	ND	ND	02/17	3.41	ND-3.41	ND	ND	ND
Nitrate (as Nitrogen) (ppm)	03/19	0.237	ND-0.237	ND	ND	ND	ND	ND	ND	ND	ND	ND
Selenium (ppb)	02/17	7.83	ND-7.83	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sodium (ppm)	02/17	115.15	7.54-115.15	03/18	13.752	N/A	02/17	29.044	18.387-29.044	03/18	56.607	36.635-56.607
Thallium (ppb)	02/17	0.466	ND-0.466	ND	ND	ND	ND	ND	ND	ND	ND	ND
<b>Stage 1 Disinfectants and Disinfection Byproducts**</b>												
Bromate (ppb)	01/19-12/19	7.28	ND-15*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chlorine (ppm)	01/19-12/19	1.0	0.2-2.88	01/19-12/19	0.96	0.2-1.77	01/19-12/19	0.88	0.2-2.0	01/19-12/19	1.22	0.21-3.61
<b>Stage 2 Disinfectants and Disinfection Byproducts**</b>												
Haloacetic Acids (five) (HAA5) (ppb)	01/19-12/19	29.09	7.10-35.84	07/19	30.39	25.34-30.39	01/19-12/19	25.86	12.27-24.07	01/19-12/19	20.15	5.84-29.71
TTHM [Total Trihalomethanes] (ppb)	01/19-12/19	78.14	33.61-120.15*	07/19	74.95	44.86-74.95	01/19-12/19	65.60	40.99-79.50	01/19-12/19	67.57	23.67-83.47*

\* Although the MCL value was exceeded, the annual average results were below the MCL.

\*\*Level Detected for Disinfectants and Disinfection Byproducts is the highest locational running annual average of monthly/quarterly averages if sampled monthly/quarterly, or the highest result if sampled annually. N/A indicates 4 quarters of samples have not yet been taken, so the Level Detected cannot be calculated.

\*\*\*Routine and repeat samples are total coliform positive and either is E. coli positive or system fails to take repeat samples following E. coli positive routine sample or system fails to analyze total coliform positive repeat sample for E. coli

<b>Lead and Copper (Tap Water)</b>												
System	Major Grid			Mayport			Lofton Oaks Grid			Ponce de Leon Grid		
	Sample Date	90th Percentile	# Exceeding AL	Sample Date	90th Percentile	# Exceeding AL	Sample Date	90th Percentile	# Exceeding AL	Sample Date	90th Percentile	# Exceeding AL
Copper (ppm)	06/17-08/17	0.130	0 of 102	06/17	0.018	0 of 9	07/17-08/17	0.032	0 of 30	06/17	0.07	0 of 12
Lead (ppb)	06/17-08/17	1.150	1 of 102	06/17	ND	0 of 9	07/17-08/17	1.400	0 of 30	06/17	1.900	0 of 12
<b>Secondary Contaminants</b>												
System	Major Grid			Mayport			Lofton Oaks Grid			Ponce de Leon Grid		
	Sample Date	Level Detected	Range of Results	Sample Date	Level Detected	Range of Results	Sample Date	Level Detected	Range of Results	Sample Date	Level Detected	Range of Results
Chloride (ppm)	02/17-04/17	329	9-329	NR	NR	NR	NR	NR	NR	NR	NR	NR
Iron (ppm)	02/17-05/17	0.439	0.003-0.439	NR	NR	NR	NR	NR	NR	NR	NR	NR
Odor (threshold odor number)	02/17-06/17	64	1-64	NR	NR	NR	02/17-05/17	5.66	1.00-5.66	03/18-04/18	64	1-64
Sulfate (ppm)	02/17-06/17	258	22-258	NR	NR	NR	NR	NR	NR	NR	NR	NR
Total Dissolved Solids (ppm)	02/17-06/17	846	141-846	NR	NR	NR	NR	NR	NR	03/18-04/18	662	528-662

\*High levels of these contaminants do not show adverse health effects. Note: St. Johns Forest WTP (Major Grid) has a FDEP Variance for Sulfate levels not to exceed 500 mg/L.

Ponte Vedra Grid			Palm Valley (PV)			Violation Y/N		MCLG or MRDLG		MCL or MRDL		Likely Sources of Contamination
Sample Date	Level Detected	Range of Results	Sample Date	Level Detected	Range of Results	Y/N	MCLG or MRDLG	MCL or MRDL	Y/N	MCL or MRDL		
ND	ND	ND	ND	ND	ND	N	0	***			Human and animal fecal waste	
ND	ND	ND	N/A	N/A	N/A	Y	0	0			Human and animal fecal waste	
02/17	3.36	ND-3.36	ND	ND	ND	N	0	15			Erosion of natural deposits	
ND	ND	ND	08/17	ND	ND	N	0	5			Erosion of natural deposits	
ND	ND	ND	08/17	0.085	ND-0.085	N	6	6			Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder	
02/17	0.037	0.0246-0.037	08/17	0.022	0.022	N	2	2			Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits	
ND	ND	ND	ND	ND	ND	N	5	5			Corrosion of galvanized pipes; erosion of natural deposits; discharge from metal refineries; runoff from waste batteries and paints	
ND	ND	ND	ND	ND	ND	N	100	100			Discharge from steel and pulp mills; erosion of natural deposits	
02/17	0.73	0.712-0.728	08/17	0.72	0.68-0.72	N	4	4.0			Erosion of natural deposits; discharge from fertilizer and aluminum factories. Water additive which promotes strong teeth when at the optimum level of 0.7 ppm	
ND	ND	ND	ND	ND	ND	N	0	15			Residue from man-made pollution such as auto emissions and paint; lead pipe, casing, and solder	
ND	ND	ND	ND	ND	ND	N	2	2			Erosion of natural deposits; discharge from refineries and factories; runoff from landfills; runoff from cropland	
ND	ND	ND	08/17	0.48	0.13-0.48	N	N/A	100			Pollution from mining and refining operations; natural occurrence in soil	
ND	ND	ND	03/19	0.026	0.019-0.026	N	10	10			Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits	
ND	ND	ND	ND	ND	ND	N	50	50			Discharge from petroleum and metal refineries; erosion of natural deposits; discharge from mines	
02/17	50.278	19.670-50.278	08/17	23.0	21.0-23.0	N	N/A	160			Salt water intrusion, leaching from soil	
ND	ND	ND	ND	ND	ND	N	0.5	2			Leaching from ore-processing sites; discharge from electronics, glass, and drug factories	
N/A	N/A	N/A	N/A	N/A	N/A	N	0	10.0			By-product of drinking water disinfection	
01/19-12/19	1.01	0.2-2.2	01/19-12/19	1.26	0.2-1.7	N	4	4.0			Water additive used to control microbes	
01/19-12/19	33.87	7.59-33.87	10/19	17.31	17.12-17.31	N	N/A	60			By-product of drinking water disinfection	
01/19-12/19	N/A	43.54-96.80	10/19	68.11	61.90-68.11	N	N/A	80			By-product of drinking water disinfection	

### Important Information

The Water Quality Report is provided to all customers of community water systems on an annual basis as required by the Environmental Protection Agency (EPA) under the 1996 Safe Drinking Water Act Amendments.

JEA routinely monitors for contaminants in your drinking water according to federal and state laws, rules, and regulations. Except where indicated otherwise, this report is based on the results of our monitoring for the period of January 1 to December 31, 2019 Data obtained before January 1, 2019, and presented in this report are from the most recent testing done in accordance with the laws, rules, and regulations. Out of more than 100 contaminants for which JEA routinely tests, only those that have been detected appear in the tables.

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 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 stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
- Organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also 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.

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 Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water, which must provide the same protection for public health.

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 by calling the **Environmental Protection Agency's Safe Drinking Water Hotline 800-426-4791**.

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### Immuno-compromised Persons

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 from their health care providers about drinking water. 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**.

### Terms & Abbreviations

In the table below, you may find unfamiliar terms and abbreviations. To help you better understand these terms we've provided the following definitions:

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

**Maximum Contaminant Level (MCL)** - The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

**Maximum Contaminant Level Goal (MCLG)** - The 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 contaminants.

**Non-Detect (ND)** - means not detected and indicates that the substance was not found by laboratory analysis.

**Not Required (NR)** - Secondary contaminants with sample results below the MCL are not required to be reported.

**Parts per billion (ppb) or Micrograms per liter (µg/L)** - one part by weight of analyte to 1 billion parts by weight of the water sample.

**Parts per million (ppm) or Milligrams per liter (mg/L)** - one part by weight of analyte to 1 million parts by weight of the water sample.

**Picocurie per liter (pCi/L)** - measure of the radioactivity in water.

**Variations and Exemptions** - State or EPA permission not to meet an MCL under certain conditions.

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

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UCMR RESULTS	Sample Date	Major Grid		Lofton Oaks		Likely Source
		Average	Range of Results	Average	Range of Results	
<b>Metals</b>						
Manganese (ppb)	02/19-08/19	0.93	ND-14.1	1.25	0.62-2.1	Naturally occurring element; essential nutrient
<b>Alcohols</b>						
1-butanol (ppb)	02/19-08/19	0.04	ND-2.2	ND	ND	Used as a solvent, food additive and in production of other chemicals
<b>Semivolatile Chemicals</b>						
Quinoline (ppb)	02/19-08/19	0.0005	ND-0.032	ND	ND	Used as a pharmaceutical (anti-malarial) and flavoring agent; component of coal
<b>Haloacetic Acid (HAA) Groups</b>						
HAA6Br (ppb)	02/19-08/19	11.3	5.86-18.2	13.38	12-15.5	By-product of drinking water disinfection
HAA9 (ppb)	02/19-08/19	22.43	15.24-31	27.57	24.6-33.7	By-product of drinking water disinfection

**Unregulated Contaminant Monitoring**

JEA has been monitoring for Unregulated Contaminants (UC) as part of a study to help the U.S. Environmental Protection Agency (EPA) determine the occurrence in drinking water of UC and whether or not these contaminants need to be regulated. At present, no health standards (for example, maximum contaminant levels) have been established for UC. However, we are required to publish the analytical results of our UC monitoring in our annual water quality report, which are shown above. Only contaminants that were detected are reported. If you would like more information on the EPA's Unregulated Contaminants Monitoring Rule (UCMR), please visit [epa.gov/dwucmr](http://epa.gov/dwucmr) or call the **Safe Drinking Water Hotline at (800) 426-4791**.

### Additional Information

**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. JEA 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 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 [epa.gov/safewater/lead](http://epa.gov/safewater/lead).

**TTHM [Total Trihalomethanes]:** The following samples during 2019 exceeded the TTHM MCL of 80 ppb. However, the system did not incur an MCL violation because all annual average results at all sites were below the MCL. Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous systems, and may have an increased risk of getting cancer.

**Major Grid:**  
172 Wandering Woods Way: 80.36 ppb (Jul), 120.15 ppb (Oct)  
9170 Milton Drive: 81.14 ppb (Jan)

**Ponce de Leon Grid:**  
2371 S. Ponte Vedra Blvd.: 83.09 ppb (Oct)  
125 Tides Edge Place: 83.47 ppb (Jul)

**E. coli:** November 25, 2019, we sampled 6 of our 39 wells for the fecal indicator, E. coli. We were notified on November 26 that St. Johns North well #4 tested positive for E. coli. On November 26, we took five additional samples from the well, issued a Boil Water Advisory (BWA) for the area, and sampled the distribution system for two days. All samples were Absent for coliforms, and the BWA was lifted November 28. E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.