

Avon Lake Regional Water

2016 WATER QUALITY REPORT

For the 2015 calendar year

The Board of Municipal Utilities

Avon Lake's Board of Municipal Utilities is the steward of the money you pay for clean water and wastewater removal. Every two years, you elect representatives to Avon Lake's Board of Municipal Utilities in November's general election. These private citizens, fellow Avon Lakers, represent you in determining the future of Avon Lake Regional Water, including how the money you pay for water and wastewater services can best be used to ensure reliable water provision and collection now and for generations to come.

Here are the individuals that served you as Avon Lake's Board of Municipal Utilities in 2015:

John Dzwonczyk
Chair

Rob Berner

Paul "Randy" Phillips

Dave Rickey

Timothy Rush



Avon Lake Regional Water

Serving the region,
protecting our resource.

Call us 24/7 at (440) 933-6226 if you are experiencing a water emergency.

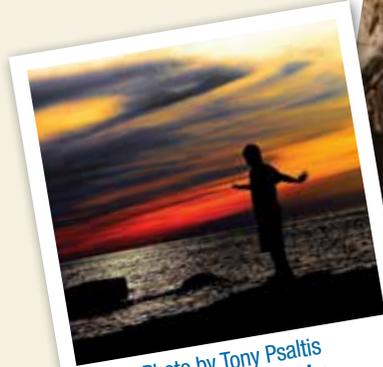


Photo by Tony Psaltis
2016 Love Your Lake
Photography Contest entrant

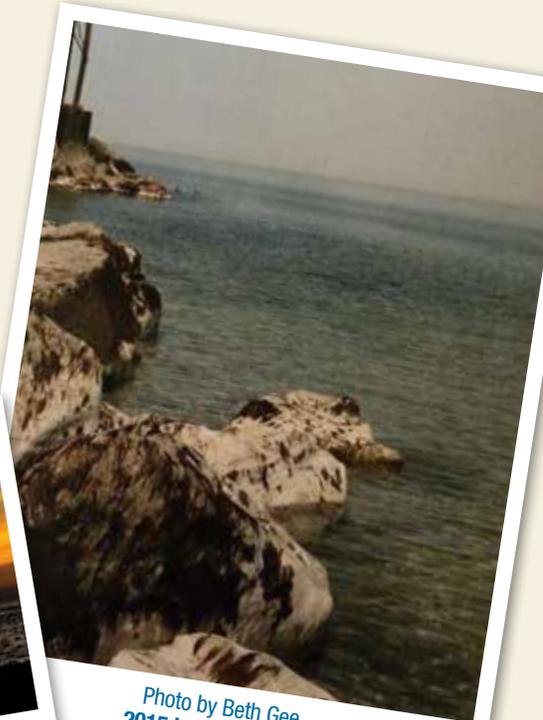


Photo by Beth Gee
2015 Love Your Lake
Photography Contest winner

Safeguarding Lake Erie and your water supply for the future.

Even thousands of years ago, people recognized the inevitability of change. Around the time the first Roman aqueduct was built, Greek philosopher Heraclitus posed his version of the truism. When it comes to your water, a lot of change has happened since the Cuyahoga River burned in 1969.

*"Nothing is permanent except for change."
- Heraclitus, ~500 B.C.*

The media coverage of that final burn (it burned at least 13 times starting in the late 1800's) gave people a sobering look at their negative impact on the environment. In the intervening decades, government regulators and water utilities have been working together to make changes in policy and infrastructure that benefit you. But, as JFK noted, looking to the future is just as important as making good on past mistakes.

In last year's report, we began talking about future changes to your water infrastructure. In this report, we'll show how some of these changes are already reaping benefits, as well as other ways our focus on the future is playing out today.

As in recent years, we are proud to feature photography from your friends and neighbors. Some of them are entrants in our Love Your Lake Photography Contest. If you see any photos you love, come vote for your favorite at Avon Lake's own beach party with a purpose—Lake Erie WaterFest, to be held this August 13 from noon until 5 p.m. at Miller Road Park.

It's not too late to enter your own photo. Visit avonlakewater.org for contest rules.

"Change is the law of life. And those who look only to the past or present are certain to miss the future."

- John F. Kennedy

The Year in Review

Frazil-ice follow-up

Our improvements and additions are in the works, with more coming. Frazil-ice-era changes are well underway. **Here's a look at what we worked on in 2015.**

| | What it is | What it will do | When it'll be complete |
|---------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| Short term: Intake-grate modifications | Modifications to our water intake grates under Lake Erie to discourage ice buildup, including an air-powered "ice-break" system | Prevent or retard ice formation on intake grates | 2015 |
| Mid term: Interconnection with Elyria Water | An agreement with a neighboring water utility to design and construct a shared conduit through which needed water could flow to either system | Create an additional water source for emergency need | 2017 |
| Long range: Storage Improvement Project (SIP) | A three-million gallon underground water storage and upgraded pumping facility | Provides added supply if there's ever a time when we must reduce the amount of water we take in from Lake Erie (i.e. frazil ice, toxic algae) | 2017 |
| | A three-million gallon above-ground water tower | | 2018 |



Photo by Sharon Turk
2015 Love Your Lake Photography
Contest winner

Your money at work

Another year, another year of making your water and wastewater systems work for you. Here's what we did with your money in 2015, including making some money back for you.

- Replaced 26 water line breaks.
- Replaced nearly 14,000 feet of new water lines.
- Built and installed more than 17,000 feet of sanitary sewer lines as part of the Moorewood basin sewer separation.
- Completed design and broke ground on Storage Improvement Project (SIP) to improve crisis resiliency.
- Struck a tentative agreement with neighboring Elyria on water interconnection project.

Here's the money we've saved you (and how):

- Competed for and won interest rate reduction from 2.07% to 0.18% for the water plant's Storage Improvements Project, which will save \$5.3 million over the life of the loan.
- More than \$128,000 cash in 2015 via energy curtailment. Beginning 2013, Avon Lake Regional Water enrolled in an energy curtailment program to go off-grid upon request in peak-demand times, resulting in payments that go straight to protecting your water supply.

To continue our commitment to environmental stewardship, we purchased more than 16 million kWh of wind-powered electricity (100% of our demand) in 2015 and reduced greenhouse gas emissions. (The fossil-fuel savings equivalent of taking more than 2,400 cars off the road.)



Photo by Sarah Gee
2015 Love Your Lake
Photography Contest winner



School partnerships

Avon Lake City Schools refilling station education

We purchased bottle fillers to keep lines short and encourage students to refill their bottles. The signs above are some of the 2015 signs that taught them a little something while they saved you money on bottled water.

Water Warriors

This educational outreach to Avon Lake fifth graders includes a tour of both our water and wastewater plants and in-school experiments. By teaching our young citizens about the water supply, and their role in it, we are investing in the future of Lake Erie... and with it, all our futures.

WaterFest Fish Design Challenge

More than 500 Avon Lake students entered, fewer than 50 won. Above is the first-ever WaterFest Fish Design Challenge art installation. Installed in September 2015 at Avon Lake Public Library, it will remain until the 2016 winners are installed in the fall of 2016.

Separating Avon Lake's combined sewers

2015 saw a marked increase in homes responding to the call to separate their outgoing water and wastewater. Why is this necessary? To reduce basement backups and raw sewage overflows into Lake Erie. The completion of the Moorewood-basin sewer separation project marked entry into the home stretch of our part of the endeavor. Only three separations remain out of Avon Lake's original 17 combined neighborhoods: Avondale, Fairfield-Brookfield and the 45s.

If your home was built before 1972, you need to call us for a free inspection. You may already be in compliance, but if you aren't, we'll help get you on your way. For additional help, we have a video available at [YouTube.com/avonlakewater](https://www.youtube.com/avonlakewater) ("This Is Why You Need to Separate"). Plus, we're instituting a loan program to help those interested in paying for their project over a longer amount of time. Call us at (440) 933-6226 or go to avonlakewater.org to learn more.

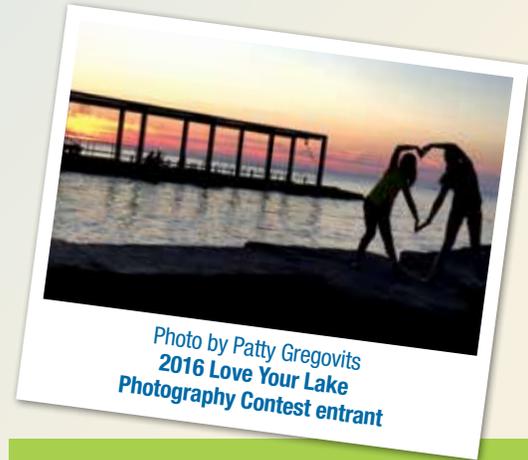


Photo by Patty Gregovits
2016 Love Your Lake
Photography Contest entrant

Most homes built before 1972 must be separated by **2.1.2018**

Innovative approaches, now and into the future

Award-winning leadership

Avon Lake Regional Water's Steve Heimlich was awarded the George Warren Fuller award for lifetime achievement in September 2015. Only one person receives this top honor from their American Water Works Association (AWWA) state organization each year. Heimlich, a 40-year veteran of the water utility industry, currently helms Avon Lake's water plant, including the new underground storage addition project, and has spent decades investing his personal time developing, mentoring and teaching up-and-coming water professionals.

"We are fortunate to have him," says Chief Utilities Executive Todd Danielson. "His experience in Lake Erie's Western Basin made him instrumental in securing our EPA grant for new algae-monitoring

equipment and sonde-probe network [to help track and forecast Lake Erie algae]. With extended family enrolled in and teaching at Avon Lake City Schools, Steve may as well be an Avon Lake native when it comes to supporting this community, in addition to the work he does for our water and the industry."

"The Fuller Award is presented each year by the Ohio section of the AWWA to water-utility-industry members for distinguished service. The award commemorates the outstanding leadership and industry advances which characterized the life of water-industry veteran George Warren Fuller," explains Brian Bisson, 2015 awards chair for the Ohio section of AWWA. "We've been fortunate to have Steve as a resource in this state."



Steve Heimlich, with wife Becky, accepting Fuller award

What are drinking water standards?

A source water assessment was conducted by Ohio EPA for the Avon Lake Regional Water system in 2002. We use surface water drawn from Lake Erie. For the purposes of source water assessments, all surface waters in Ohio are considered to be susceptible to contamination. Due to the vast size and dilution capabilities of Lake Erie, Ohio EPA evaluated our water's contamination potential based on a Critical Assessment Zone (CAZ) and determined there was no direct source of pollution. Ohio EPA further determined that our source water analysis and emergency operation plan would minimize undetected contamination.

Avon Lake Regional Water treats water to meet EPA drinking water quality standards. Implementing measures to protect Lake Erie can further decrease the potential for water quality impacts. More detailed information is provided in the Drinking Water Source Assessment report, which can be obtained by calling Steve Heimlich at (440) 933-3229.

Sources of drinking water — for 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 human activity.

Contaminants in source water come from various places: microbial contaminants such as viruses and bacteria may originate in sewage plants, septic systems, livestock operations and wildlife; salts, metals and other inorganic substances can occur naturally or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining or



Harnessing Nature to Efficiently Solve Problems

Biomimicry is the industrial design science of using solutions found in nature to help solve problems found in business. In 2015, we entered into a partnership with Great Lakes Biomimicry (GL Bio), one of the nation's leading biomimicry collaboration organizations. The partnership includes other Northeast Ohio companies, such as GoJo, Parker Hannifin, and Ross Incineration Services. The arrangement means Avon Lake Regional Water has two Ph. D. fellows working in tandem at our water plant to develop cutting-edge technology that will help us use your money more efficiently, and possibly even create a revenue stream to help us continue to keep your rates low.

farming; pesticides and herbicides enter the stream from agriculture, urban storm water runoff, and general residential use; while organic chemical contaminants are often by-products of industrial and petroleum production, they are also linked to gas stations, urban storm water runoff and septic systems; and finally, radioactive contaminants can occur naturally or via oil and gas production or mining activities.

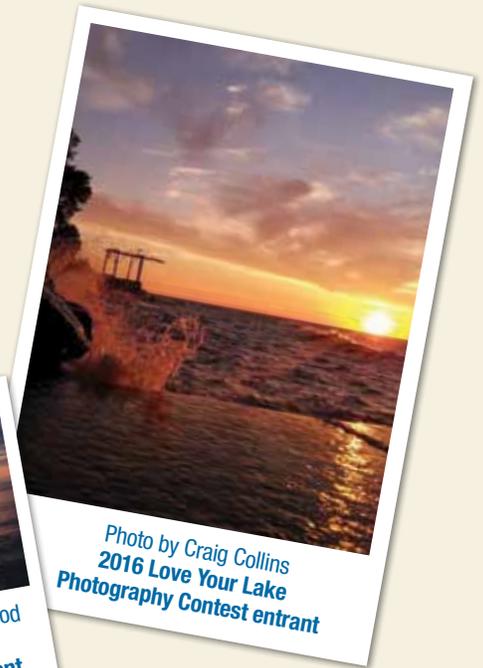
In order to ensure that tap water is safe to drink, EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. FDA regulations establish limits for contaminants in bottled water, which must provide the same protection for public health.

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 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 at (800) 426-4791.

Where does your water come from?

Our water filtration plant draws its water from Lake Erie. There are two separate intakes to ensure our ability to pump from this virtually endless source of quality raw water. The raw water is then treated with alum to aid in the removal of turbidity (dirt) and activated carbon is added to remove organics to improve taste and odor. Next, this treated water goes through flocculation, sedimentation, and

filtration to remove turbidity and other contaminants. The water is then treated with chlorine for disinfection and fluoride for dental health prior to being pumped to your home. The Avon Lake water filtration plant is staffed around the clock with approximately 150 tests run on the drinking water every day and over 50,000 each year.



Avon Lake Table of Detected Contaminants in 2016

| Contaminants (Units) | MCLG | MCL | Level Found | Range of Detections | Violation? | Year Sampled | Typical Source of Contaminants |
|--------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|--------|-------------|---------------------|------------|--------------|---------------------------------------------------------------------------------------------|
| Microbiological Contaminants | | | | | | | |
| Turbidity (NTU) ¹ | n/a | TT | 0.13 | 0.03 - 0.13 | No | 2015 | Soil runoff |
| Turbidity (% samples meeting standard) | n/a | TT | 100% | 100% | No | 2015 | |
| Total Organic Carbon (ppm) ² | n/a | TT | 1.0 | 1.0 - 1.60 | No | 2015 | Naturally present in the environment |
| Inorganic Contaminants | | | | | | | |
| Barium (ppm) ³ | 2 | 2 | 0.027 | 0.022 - 0.032 | No | 2014-15 | Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits. |
| Copper (ppm) | 1.3 | AL=1.3 | 0.06 | n/a | No | 2013 | |
| <i>90th percent sample result</i> | Zero out of thirty samples was found to have copper levels in excess of the copper action level of 1.3 ppm. | | | | | | |
| Lead (ppb) | 0 | AL=15 | <3.0 | n/a | No | 2013 | Corrosion of household plumbing |
| <i>90th percent sample result</i> | One out of thirty samples was found to have lead levels in excess of the lead action level of 15 ppb. | | | | | | |
| Fluoride (ppm) | 4 | 4 | 0.92 | 0.75 - 1.19 | No | 2015 | Water additive which promotes strong teeth |
| Nitrate (ppm) | 10 | 10 | 1 | .11 - 1.0 | No | 2015 | Natural deposits, fertilizers, sewage |
| Volatile Organic Contaminants³ | | | | | | | |
| Haloacetic Acids (ppb) ⁴ | n/a | 60 | 10.5 | 10.5 - 17.5 | No | 2014-15 | By-product of drinking water disinfection |
| Total Trihalomethanes (ppb) ⁴ | n/a | 80 | 31.1 | 19.4 - 42.9 | No | 2014-15 | By-product of drinking water disinfection |
| Residual Disinfectants | | | | | | | |
| Chlorine (ppm) ³ | MRDLG | MRDL | 1.19 | 1.13 - 1.42 | No | 2014-15 | Water additive to control microbes |



Photo by Todd Danielson



Photo by Jantz Photography



Photo by Sarah Gorman
2016 Love Your Lake
Photography Contest entrant



Photo by Jillian Beer
2016 Love Your Lake
Photography Contest entrant

Definitions

- **AL (Action level)** – The concentration of a contaminant that, if exceeded, triggers a treatment or other requirement that a water system must follow.
- **Contaminant** – Any physical, chemical, biological, or radiological substance or matter in water.
- **MCL (Maximum Contaminant Level)** – The highest level of a contaminant that is allowed in drinking water. MCL's are set as close to the MCLG's as feasible using the best available treatment technology.
- **MCLG (Maximum Contaminant Level Goal)** – The level of contaminant in drinking water below which there is no known or expected risk to health. MCLG's allow for a margin of safety.
- **MRDL – Maximum Residual Disinfectant Level**
- **MRDLG – Maximum Residual Disinfectant Level Goal**
- **N/A – Not applicable**
- **ND – Not detected**
- **NTU – Nephelometric Turbidity Units**
- **PPB (Parts per billion)** – Unit of measure for concentration of a contaminant. A part per billion corresponds to one second in 31.7 years.
- **PPM (Parts per million)** – Unit of measure for concentration of a contaminant. A part per million corresponds to one second in a little over 11.5 days.
- **TOC (Total Organic Carbon)** - the amount of carbon found in an organic compound. Often used as a non-specific indicator of water quality. Powdered activated carbon is also used to remove or adsorb impurities and TOC out of water and is removed early in the treatment process.
- **TT (Treatment technique)** – A required process intended to reduce the level of a contaminant in drinking water. For example, we add lime to increase the pH of our finished water in order to maintain compliance with the lead and copper rule.
- **VOC – Volatile Organic Chemicals**
- **WTP – Water Treatment Plant**

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. Avon Lake 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 thirty seconds to two 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. A list of laboratories certified in the State of Ohio to test for lead may be found at <http://www.epa.ohio.gov/ddagw/labcert.aspx>, or by calling 614-644-2752. Information on lead in drinking water, testing methods, and steps you take to minimize exposure is available from the Safe Drinking Water Hotline at (800) 426-4719 or at <http://www.epa.gov/safewater/lead>.

Avon Lake has a current, unconditioned license to operate our water system from the Ohio EPA.

¹Turbidity is a measure of the cloudiness of water and is an indication of the effectiveness of our filtration system. The turbidity limit set by the EPA is 0.3 NTU in 95% of the daily samples and shall not exceed 1 NTU at any time. As reported above the Avon Lake WTP highest recorded turbidity result for 2015 was 0.13 NTU and lowest monthly percentage of samples meeting the turbidity limits was 100%.

²The value reported under "Level Found" for Total Organic Carbon (TOC) is the lowest ratio between percentage of TOC actually removed to the percentage of TOC required to be removed. This removal ratio is calculated as the ratio between the actual TOC removal and the TOC rule removal requirements and other parameters. A value of at least one (1) indicates that the water system is in compliance with TOC removal requirements.

³These contaminants' level found is the highest compliance value based on a running annual average. This average includes results from 2014 & 2015.

⁴Disinfection byproducts are the result of providing continuous disinfection of your drinking water and form when disinfectants combine with organic matter naturally occurring in the source water. Disinfection byproducts are grouped into two categories, Total Trihalomethanes (TTHM) and Haloacetic Acids (HAA5). USEPA sets standards for controlling the levels of disinfectants and disinfectant byproducts in drinking water, including both TTHMs and HAA5s."

Avon Lake Regional Water has a current, unconditional license to operate our water system from the Ohio EPA.

Avon Lake Regional Water

201 Miller Road
Avon Lake, Ohio 44012



Photo by Eileen McGunagle

Source Water Monitoring

The USEPA has required public water systems that use surface water to monitor for Cryptosporidium, E. coli and turbidity based on system size and filtration type. The Avon Lake water plant has always monitored Lake Erie water for E. coli and turbidity as part of the treatment process. Monthly source water samples were analyzed for Cryptosporidium beginning in April 2007 through March 2010 and none were detected.

Is there a risk?

Although Avon Lake Regional Water's drinking water is better than all state and federal water quality standards, some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune

system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline at (800) 426-4791.

Have questions? Call us at (440) 933-6226.

You can use that same number if you are experiencing a basement water emergency, anytime, day or night, seven days a week. For non-emergencies, email us at contact@avonlakewater.org,

like us on Facebook (where you'll see daily Avon Lake beach bacteria counts Tuesday through Friday, Memorial Day until Labor Day), follow us on Twitter or Instagram ([avonlakewater](https://www.instagram.com/avonlakewater)) or visit our website at avonlakewater.org.

