

Toronto Harbour Monitoring Report 2017



Swim Drink Fish has been working for a swimmable, drinkable, fishable future since its launch in 2001. By blending science, law, education, and storytelling with technology, we empower millions of people to know and safeguard their waters. Swim Drink Fish operates four programs: Great Lakes Challenge, Lake Ontario Waterkeeper, Swim Guide, and Watermark Project.

Lake Ontario Waterkeeper's mission is to ensure our watershed is swimmable, drinkable, fishable for everyone. We do this by giving meaning and force to water protection laws and policy.

“When volunteers collect evidence, they help create a swimmable, drinkable, fishable future for the Toronto Harbour.”

- Mark Mattson, President *
Waterkeeper



Introduction

Every day from early June to Labour Day, City of Toronto representatives test the water at the city's eleven official beaches. They collect five samples at each beach and send the water to a lab for incubation and analysis. After 24 hours, beaches with bacteria levels above Ontario's water quality guidelines will be "posted". Lifeguards will fly red flags to let beach-goers know that water quality does not meet government guidelines. Test results are also posted online, shared on a city hotline, and redistributed through Swim Guide using the city's open data stream. The program gives beach goers access to some of the most frequent, reliable water quality information on the Great Lakes.

While bathers are hitting the beach, boaters are flocking to Toronto Harbour. They sail, powerboat, paddle, windsurf, and row in the Harbour and along the downtown waterfront. They do rolls, splash through wake, flip their boats, fall off paddleboards, and enjoy the spray that splashes their faces as they move across the water. Unlike beach-goers, boaters do not receive water quality updates.

Many of the most popular recreational zones in the Harbour area are located near sewage outfalls. These outfalls are a problem because they routinely dump sewage and rainwater laced with bacteria, oil, chemicals, and debris into the harbour. The city's aging infrastructure even carries untreated sewage from homes and businesses into the harbour.

On some days, you can see condoms and tampons and visible signs of sewage pollution in the water. On other days, the water quality problems are invisible - that's why water testing is important. The main indicator of recreational water quality for freshwater, like Lake Ontario, is E.

coli bacteria. High levels of E. coli tell you when there is an elevated health risk and when water quality may be harmful to fish, insects, and other natural life.

On some days, harbour water quality is as good or better than beach water quality. On other days, bacteria levels soar. Because of the sewage outfalls, water quality changes quickly and can be very different from one place to the next in the harbour. That's why regular testing is important

Waterkeeper conducted its first water quality monitoring program in the Toronto Harbour in 2016. Our goals were to identify pollution hotspots in the harbour, to better understand the relationship between rain and water quality, and to establish a baseline for water quality. In our 2016 report, Waterkeeper identified the places where sewage flows into the Harbour and showed that most water quality problems can be linked to sewage outfalls.

In 2017, Waterkeeper and a team of dedicated volunteers tested the water weekly, analyzed the samples in our in-house lab, and published results to the Swim Guide (www.theswimguide.org). For the first time, boaters in the Harbour had access to the same kind of water quality reports as beach-goers.

This report summarizes our findings and offers recommendations that will help to protect Toronto Harbour and water users.

Toronto Harbour Monitoring Results

Pass and Fail

The Waterkeeper Investigation team monitored three locations in the Toronto Harbour from May to September:

- Bathurst Quay by the Waterfront Community Centre,
- Rees Street Slip at Harbourfront Canoe and Kayak Centre, and
- Marina 4 by the former Purina PawsWay building.

Waterkeeper chose these three locations because they are popular destinations for water users (boaters, paddlers) and because they are close to sewage outfalls.

Every Wednesday, the team gathered on the waterfront to collect water samples and record observations about water quality. A handful of additional samples were also collected after heavy rains, in order to monitor changes to water quality. Between May 17 and September 6, the team visited the harbour 20 times, collecting a total of 339 samples from the three locations.

Location	# of Visits May 17 - Sept 6 2017	Pass	Fail
Marina 4	20	60%	40%
Rees Street	20	85%	15%
Bathurst Quay	18	22%	78%
Combined Results	—	57%	43%

By comparison, Toronto beaches for the same period met water quality guidelines 87% of the time and failed 9% (no data was available the remaining 4% of days).

***E. coli* Results**

Waterkeeper tested harbour water for *E. coli* bacteria. This is the established indicator for urban water health. We compare the geometric mean of five samples to Ontario’s standard of 100 cfu/100 mL of water. Test results at or above 100 fail. Test results below 100 pass.

The highest levels of *E. coli* were found on July 21, 2017. The team made a special trip to the Harbour after a heavy rainfall to monitor the impact of wet weather on the harbour. Every individual sample collected failed to meet provincial water quality guidelines. The highest geometric mean result of the three locations was 6,742 *E. coli* units at Bathurst Quay. By comparison, every city-monitored beach met provincial water quality standards that day.

September 6 was the next-worst water quality day of the summer program, also at Bathurst Quay. *E. coli* results on that day were over 2,400 units. We don’t know what bacteria results were like at city beaches that day, because beach monitoring ended September 4.

On good days, Harbour water is similar to water at Toronto’s best beaches. Low *E. coli* levels mean waters are suitable for swimming or boating and pose lower risk to public health.

The significant swings in water quality show why regular testing is necessary. Water quality changes dramatically, and water users should have the most accurate information possible. People who are thinking about using the harbour for the first time may not be aware of the risk posed by sewage outfalls and high bacteria levels. Similarly, people who are “afraid” of Lake Ontario water quality may avoid the waterfront because they do not realize how fantastic the water can be.

Cost of the Monitoring Program

The total cost of the Toronto Harbour Monitoring project in 2017 was about \$33,000. This included a one-time investment in an IDEXX monitoring system and staff time. It also included training and sample analysis for the Outer Harbour Sailing Federation and a member of the Ontario Underwater Explorers SCUBA Club; these are community groups who started their own volunteer monitoring programs in August.

Funds for the project were provided by Evergreen & Muskoka Brewery, RBC, the Boris Family Foundation, and the Martin Family.

The Future of Water Quality Monitoring for Torontonians

Potential for Future Monitoring and Community Engagement

In addition to providing regular water quality monitoring results to waterfront users, Waterkeeper's Harbour Monitoring program trained more than 40 volunteers to monitor harbour health and improved their water literacy skills. Promoting water literacy is the best - and only - way to ensure the long-term health of Toronto's waters.

Over the course of the summer, increasing numbers of volunteers joined the sampling program. Two groups also launched volunteer monitoring programs: The Outer Harbour Sailing Federation and Rohan Omrow, a member of the Ontario Underwater Explorers SCUBA Club. These and other organizations have expressed interest in helping to monitor recreational water zones in the Toronto region in 2018. Waterkeeper is eager to find ways to support these community groups in order to promote water literacy and increase access to reliable water quality information for all Torontonians.

Water samples collected offshore in the Outer Harbour met water quality standards. Samples collected at Humber Bay Park West failed 50% of the time. These results show the importance of collecting samples at different locations along the Toronto waterfront and illustrate how trained volunteers can fill data gaps with citizen science.

Recommendation to the City of Toronto

The City of Toronto currently monitors water quality at city beaches from early June through to Labour Day. The City tests water daily at these 11 locations and posts results on its website, phone hotline, and through its open data portal.

Boaters, especially in the Inner Harbour, should have access to the same water quality information as swimmers. Many are using small craft, such as kayaks, and submerge their heads fully in Harbour waters. They are often in the lake near sewage outfall locations, where water quality can change daily.

Boating and other recreational water activities are important activities that Toronto should encourage. They promote physical and mental health, build social cohesion, contribute to a high quality of life, and help to make Toronto a great place to live and visit. These activities also contribute positively to local economies and support a range of small businesses. We should do everything we can to ensure that boaters and other water users have a positive experience on Toronto waters.

The City has a \$2-billion wastewater system improvement plan, but it will be many years before waterfront infrastructure is upgraded.

In the meantime, there are three things the City of Toronto can do to improve people's experiences on the Toronto waterfront, protect public health, and improve public awareness for wastewater infrastructure challenges:

1. Test water quality in Toronto Harbour in key recreational water use locations and share results with the public through the city's beach water quality information service.
2. Provide real-time alerts to inform water users when sewage overflows occur (for example, see the City of Kingston's real-time sewage overflow website). This keeps water users informed even when current bacteria results are not available.
3. Clean up sewage debris (e.g., condoms, tampon applicators) when public or waterfront businesses report concerns.

Recommendation to Waterfront Users

The most effective thing a waterfront user can do to help protect the lake they love is to report pollution, especially sewage and plastics debris. Toronto's sewage problems mean that condoms, tampon applicators, and plastics can be seen floating in the harbour or washing ashore in places like Humber Bay on a regular basis. It doesn't have to be this way.

When you see pollution, report it to 311 Toronto by calling 311 on your phone, emailing 311@toronto.ca, or Tweeting [@311Toronto](https://twitter.com/311Toronto). This will alert the city to problem locations and create an official record of your concerns.

You can also report pollution directly to Waterkeeper's Investigation Team using the pollution reporting form on our website at www.waterkeeper.ca/report-pollution or the Report Pollution button in the Swim Guide app.

Water users who want to protect their health should take care after it rains. You can't always tell if water is contaminated by how it looks, so it's important to wash your hands after coming into contact with the water.

For more information, please visit Lake Ontario Waterkeeper's website: www.waterkeeper.ca.