

RiverWatch™ Water Quality Monitoring Program



RiverWatch™ is Sydney Water's environmental monitoring and reporting program to enable safe swimming in urban waterways. Assessing recreational water quality is an important component of safely opening new sites for swimming (primary contact) or kayaking (secondary contact). The RiverWatch program assesses how microbial contaminants impact water quality during the establishment phase and then continues monitoring during ongoing operation of a swim site.

Approach to monitoring

The RiverWatch monitoring program follows the National Health and Medical Research Council's Guidelines for Managing Risks in Recreational Waters and the NSW Water Quality Objectives. It is aligned with similar recreational water quality monitoring programs such as Beachwatch to maintain a consistent approach across Sydney.

What are we sampling for?

Contamination of recreational water with faecal matter from humans or animals can lead to health problems because of the presence of disease-causing microorganisms (pathogens).

The key water quality indicators being assessed are:

- **Enterococci:** Bacteria that may be used as an indicator of how much faecal matter is present in recreational waters.
- **Conductivity:** An indicator of the salts in water. Conductivity will be used to identify the presence of freshwater from stormwater and wastewater sources in estuarine sites.
- **Temperature:** Influences how other water quality indicators react, including the growth rate of microorganisms.

- **Turbidity:** A measure of the amount of material suspended in the water. This can affect the transport, reactivity and biological impacts of a range of contaminants.
- **Dissolved oxygen:** An indicator of the overall ecological health of the waterway. Aquatic organisms need dissolved oxygen to survive.
- **Chlorophyll-a:** The green pigment found in plants. High levels often indicate planktonic algae and poor water quality.

Establishment monitoring

Using the standard field and laboratory-based approach, sampling occurs on a routine basis, usually every 4 to 6 days, with sampling for chlorophyll-a conducted monthly.

In addition to routine sampling, we do targeted sampling at each site over a period of 5 consecutive days following rain. This targeted sampling helps us understand how microbial contamination impacts each site and the time required for water quality to return to suitable levels for swimming.

Ongoing microbial monitoring

Following site establishment, ongoing monitoring is required to detect any potential changes over time and ensure water quality remains suitable for swimming. Sampling occurs weekly during summer (October to May) and monthly during winter.

There are newly emerging technologies that can monitor microbial, physical and chemical water quality using in situ sensors. A number of these technologies are being trialled by Sydney Water.

Sydney Water is also pioneering the use of a predictive model to overcome delays in reporting water quality from traditional field sampling and lab analysis techniques.

RiverWatch Predictive Model

The predictive model was developed in partnership with UNSW. Coupled with our reporting platform, this new development is improving how we make decisions about when and where to swim.

The site-specific predictive models take antecedent rainfall and other environmental factors to predict daily microbial pollution load at swim sites.

This information is then converted to an index that is communicated to the public as 'pollution unlikely', 'pollution possible' or 'pollution likely'.

Algae monitoring

Algae is a natural part of the aquatic ecosystem but can become a nuisance if environmental conditions allow it to bloom.

Cyanobacteria (also known as blue-green algae) are microscopic bacteria living in water that can produce a toxin that is harmful to humans and animals.



Algal blooms can occur in freshwater when there is a combination of suitable environmental conditions including:

- warmer water temperatures
- elevated nutrients
- stable conditions, minimal turbulence, low flows.

Blooms can often be recognised through a discolouration of the water and a musty odour.

In areas that are at high risk of algae issues, sampling for algae should be carried out at least weekly; however, this should be increased to daily sampling during the development of blooms. Monitoring of toxicity (using bioassays, or chemical or immunological procedures) is justified only where significant hazards to human health are suspected.

The WaterNSW website has useful resources to help in identifying algal blooms. To report a suspected bloom, an email can be sent to RACC@waterNSW.com.au.

Like more information?

To learn more, visit www.urbanplunge.com.au or email riverwatch@sydneywater.com.au.