

Recreational water quality

ANNUAL MONITORING SUMMARY 08/09



Key points

- Marine water sites complied with guideline values in 90% of all samples.
- Freshwater sites complied with guideline values in 95% of all samples.

How we monitor water quality

Each summer between December and March, Otago Regional Council (ORC) monitors the water quality at popular marine and freshwater bathing sites. Water samples are taken once a week over the summer and tested for the concentration of indicator bacteria (*Escherichia coli* in freshwater and enterococci in salty water). These bacteria, while generally not harmful themselves, indicate the presence of faecal material and disease-causing organisms.

Why we monitor water quality

Micro-organisms such as viruses, bacteria and protozoa are present in all natural water bodies. Water contaminated by faecal micro-organisms may pose a human health hazard, particularly if swallowed. Everybody can be affected but small children, the elderly and people already weakened by illness or fatigue are more likely to become ill from exposure to contaminated water.

In most cases, the health effects of exposure to contaminated water are minor and short-lived. The most common illnesses are those of the gastric-intestinal system, leading to symptoms like diarrhoea or vomiting, and infections of the eye, ear, nose and throat. However, there are other potentially more harmful diseases such as giardiasis, cryptosporidiosis, campylobacteriosis and salmonellosis. Hepatitis A can be contracted from contaminants in the water and can lead to long-term health problems.

By testing the water regularly for indicator bacteria and posting results on the ORC website, it is hoped the public can make informed decisions about whether to enter the water.



TAIERI RIVER AT OUTRAM

Guidelines for contact recreation

Fresh and marine waters

Water quality safety is assessed and reported according to the Ministry for the Environment and Ministry of Health Microbiological Water Quality Guidelines for Marine and Freshwater Recreational Areas (also known as the guidelines for contact recreation).

The guidelines recommend a three-tier (traffic-light) management framework according to single sample results of *E. coli* (freshwater) and enterococci (marine water) bacterial counts. These categories are given below:

Mode	Safe for Swimming?	Freshwater (<i>E.coli</i> /100ml)	Marine (Enterococci /100ml)
Surveillance/ Green	Should be very safe for swimming	No single sample greater than 260	No single sample greater than 140
Alert/Amber	Should be satisfactory for swimming	One single sample between 261 and 550	One single sample between 141 and 280
Action/Red	Could be a health-risk for swimming	One single sample greater than 550	Two consecutive single samples greater than 280

In this report, the *E. coli* results are compared to the 'action' threshold of 550 *E. coli* per 100ml of water and the enterococci results are compared to the 'action' threshold of 280 enterococci per 100ml of water. The higher the number of samples taken over a bathing season that comply with guidelines the better the water quality.

Recreational shellfish gathering

The guideline for water quality is that the median faecal coliform content of samples taken over the season shall not exceed 14/100ml and not more than 10% of samples should exceed 43/100ml.

How do you know if it's safe to swim?

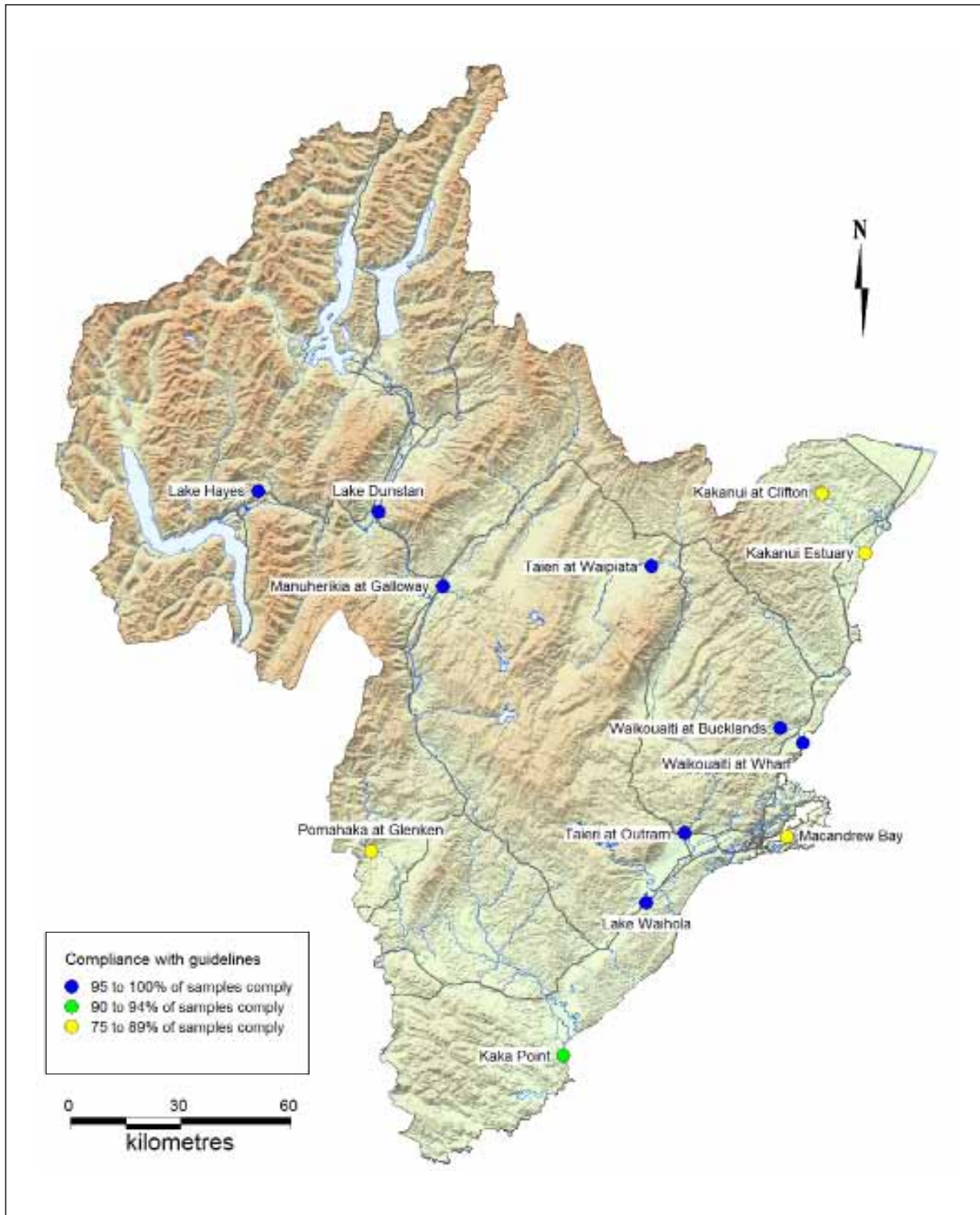
Before heading out, check the recreational water monitoring section of the ORC website: www.orc.govt.nz

This will tell you if the water was suitable for swimming the last time it was tested and the typical water quality of the site.

Avoid swimming and collecting shellfish during heavy rain and for up to two days afterwards. For information on the water quality of Dunedin city beaches, check out the Dunedin City Council website www.dcc.govt.nz

Sites monitored in 2008 - 2009

Thirteen sites were sampled between the beginning of December 2008 and the end of March 2009. Eight of these were sampled on a weekly basis and the other five on a monthly basis. The sites and level of compliance with guideline values are detailed in the map below.





FRESHWATER INVERTEBRATES
SOURCE: STEPHEN MOORE



Water quality results

Marine waters

In the summer of 2008 – 2009, estuary/marine water quality was sampled a total of 48 times. Of these, five results (10%) did not meet guideline levels. The Waikouaiti Estuary had 100% compliance with guideline values. Kaka Point and Kakanui Estuary showed a high level of compliance with recreational water quality guidelines apart from on 24 February, when sampling coincided with a four-day rainfall event with a total of 78mm rain. Bacterial numbers at Macandrew Bay in Otago Harbour exceeded the guideline level three times (5, 16 and 29 January), none of which were related to large rainfall events. A water quality survey in the Greenacre Stream catchment failed to identify the source of bacteria.

Freshwater bathing sites

In freshwater, the MfE/MoH bathing guideline was exceeded on only four occasions (15%). Microbiological water quality on these occasions was compromised following heavy rainfall.

The Kakanui River at Clifton Falls exceeded the guideline on 15 December and 19 January. There was a small amount of rainfall on 15 December (4.0mm), but 19 January coincided with a 13.5mm rainfall event. (Clifton Falls rain gauge) The Pomahaka River at Glenken also exceeded the guidelines on two occasions. Sampling on 9 December coincided with 31mm rain and sampling on 19 January coincided with a rainfall event of 28.5mm. (moa Flat rain gauge). All the other sites maintained a high level of water quality.

KAKANUI RIVER AT CLIFTON FALLS



Water quality for recreational shellfish gathering

In addition to the recreational bathing water sampling, the marine sites were monitored to assess their suitability for shellfish gathering. All sites had seasonal medians that complied with the guidelines, but Macandrew Bay and Waikouaiti estuary had more than 10% of samples exceeding the 43 faecal coliforms 100/ml guideline. The Pacific Ocean open water site at Kaka Point had low faecal coliform numbers.

Site	Median faecal coliform result/100ml	Percent of results >43/100ml
Pacific Ocean: Kaka Point	0.75	0
Otago Harbour: Macandrew Bay	8	21
Waikouaiti Estuary at Wharf	4	16

What do the results mean?

Recreational water quality at monitored coastal sites met the guidelines for contact recreation on 90% of sampling occasions, whilst those at freshwater sites met the guidelines on 95% of sampling occasions.

Recreational water quality can vary enormously depending on the weather. For example, during a wet summer (with frequent rain) more faecal matter is carried from the land into rivers and estuaries. Therefore, bacteria levels in the water during wet summers are often high when compared with dry summers. The exceedences of guidelines during the summer of 2008 - 2009 were generally related to rainfall events.

Coastal beaches generally have lower levels of bacteria than freshwater swimming spots. This is largely because faecal matter is more rapidly diluted and dispersed by ocean currents and large volumes of water at the coast.



TAIERI RIVER AT OUTRAM

Did you know?

- Recreational water quality can be affected by effluent run-off from farmland, human wastewater discharges and stormwater outfalls. Bacteria levels are often highest after rainfall.
- Water that has been contaminated with human or animal effluent can carry a variety of disease-causing organisms.
- Disease-causing organisms can pose health risks to people using the water for activities such as swimming. Very young children, the elderly or people with impaired immune systems are particularly vulnerable.

More information

Further information on recreational water monitoring is available on the ORC website :

www.orc.govt.nz



POMAHAKA RIVER AT BLACKBRIDGE

Contact

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