



King County

Protecting Our Waters

Doing our part on rainy days

Water Quality Assessment and Monitoring Study Update

September 2015

Initial Findings from Bacteria Study

The Water Quality Assessment and Monitoring Study includes a review of existing data and literature and additional studies to fill in gaps in the available data. King County routinely monitors bacteria in surface waters. However, spatial patterns in bacteria concentrations stood out as a priority for additional study.

Fecal bacteria in waterways are a sign of pathogens that can make people sick. These bacteria come from warm-blooded animals like beavers, birds, pets and people. Bacteria can get washed into waterways from stormwater and combined sewer overflows (CSOs). They can also be released from boats or incorrect plumbing. Or they can enter the water directly from wildlife and swimmers.

Since the 1970s and 1980s, bacteria counts have been declining in Lake Union/Ship Canal, Elliott Bay, and the Duwamish Estuary. However, bacteria can still be found in the water before and after rain. In fact, all three water bodies are on Ecology's 303(d) list of polluted waters that require reduction of fecal bacteria.

Why an assessment?

The assessment will inform King County's [Combined Sewer Overflow \(CSO\) Program](#), now called **Protecting Our Waters**. The assessment will help ensure that investments in CSO control are well planned to optimize water quality improvements in Elliott Bay, Lake Union/Ship Canal, and the Duwamish River.

Study Methods

We sampled each water body six times in 2014 – three times during wet weather and three times during dry weather. We took water samples 250 feet from shore, every 500 feet along the shoreline of each water body. We took another set of samples 500 feet from shore in Elliott Bay during the outgoing tide. Some of the samples were analyzed to find out if the bacteria came from human sources.

Findings

Not surprising, there are more bacteria in the water after a storm when stormwater and CSOs have overflowed than during dry weather:

- In Lake Union/Ship Canal, the highest concentrations of bacteria in both wet and dry weather are found in Salmon Bay. Even in dry weather, bacteria from humans can be found there, possibly discharged from boats or leaking sewer systems. The samples show no evidence that the floating homes lining Lake Union's shoreline are sources of bacteria.
- The Duwamish River's East Waterway has the highest bacteria concentrations in the estuary. This may be from wildlife, boats, or urban streams. Human-associated bacteria can be found there on wet and dry days. On stormy days the bacteria counts are much higher. There are several large CSOs in the East Waterway.
- In Elliott Bay, few bacteria are present on dry days. But on rainy days bacteria are found along Seattle's waterfront. This is where water from stormwater, CSO outfalls, and the Duwamish River's East Waterway flow

together. Human-associated bacteria were detected along the waterfront during wet weather. One surprise is that bacteria were not detected near the Magnolia CSO, even shortly after it overflowed.

Next Steps

These findings will be published in 2016, along with the rest of the Water Quality Assessment and Monitoring Study findings. In the meantime, you can see the slides – including maps of the sampling sites – on the web. Check the presentation that the [Science and Technical Review Team](#) reviewed on September 1, 2015.

Find out more on [the Web](#) at <http://www.kingcounty.gov/environment/wastewater/CSO/WQstudy.aspx> or by contacting **Erika Peterson**, at 206-477-5525 or Erika.peterson@kingcounty.gov.