

Come on in, the Water's OK!

by Sandy Guldman

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This spring, public swimming pools and beaches were closed, people were urged to stay home, and Corte Madera Creek looked very tempting on hot afternoons. The warm weather prompted a number of phone calls and emails to Friends with two questions: Are we allowed to swim in the creek? Is it safe to swim in the creek? The answer to the first questions is easy: do so at your own risk. The second question is more to the point. We replied that based on our most recent testing, about 15 years ago, swimming in the creek wasn't recommended, but it is probably not dangerous to swim well downstream of Bon Air Bridge and at high tide, as long as you don't swallow any water and take a shower after swimming in the creek.

Clean bay water, mostly from the ocean, flushes the system twice a day, keeping the water clean and safe for swimming. The less tidal exchange there is, the more bacteria the water is likely to contain. Note that we didn't test water quality in the High Canal or Larkspur Creek, both of which are likely to be much more polluted than the main stem.

The keen public interest prompted us to consider testing again. We first checked with the Marin County Community Development Department, Environmental Health Services, which samples water weekly at beaches in Marin County. Although Corte Madera creek doesn't have beaches, it is heavily used by rowers, paddle boarders, and swimmers. However, when we asked if they would consider adding a couple of sites on the creek, the answer was no.

Our next call was to Steve Moore, General Manager of Ross Valley Sanitary District, to ask if RVSD had a lab. He replied that RVSD sends samples to a lab at the Central Marin Sanitation Agency. Then Steve contacted Jason Dow, CMSA's General Manager, to see if their lab would process samples from Corte Madera Creek for Friends at no charge. Jason agreed to do so. Friends bought some supplies, CMSA provides other supplies, and three of us started sampling at the end of August.

We take samples at docks in Piper Park and at the Marin Rowing Association. As soon as the City of Larkspur has repaired the public dock downstream of MRA, we can switch to that location. In the hope that Marin County might eventually add Corte Madera Creek to their testing program, we decided to follow their protocols. We collect samples once a week on Monday or Tuesday and deliver them to the CMSA lab. The County's focus is on recreational use, so they sample April 1 through October 31. We got a late start, so we have data only for September and October.

The samples collected by Marin County are tested for Total Coliform, *E. coli*, and *Enterococcus* bacteria. Advisories are posted at a beach when a recreational standard for these indicator organisms is exceeded. Two samples are taken at each site; one is used for Total Coliform and *E. coli*, the second for *Enterococci*.

According to the EPA, *Enterococci*, a subgroup within the fecal streptococcus group, are distinguished by their ability to survive in saltwater. For that reason, the EPA recommends *Enterococci* as the best indicator of health risk in saltwater used for recreation and as a useful indicator in fresh water as well, and defines a testing methodology and a measurement unit of the number of colonies of bacteria that have grown under controlled conditions, expressed as the most probable number or MPN. EPA recommends *E. coli*, a species of fecal coliform bacteria specific to fecal material from humans and other warm-blooded animals, as the best indicator of health risk in freshwater. Perhaps surprisingly, fecal coliform as a group (Total Coliform) is considered a poor indicator of the risk of digestive system illness.



Swimmers enjoy themselves in the High Canal behind Tamal Vista Blvd. The water here is probably less clean than in Corte Madera Creek where tidal flushing occurs twice daily. Photo by Sandy Guldman

Bacterial contamination is highly variable. To smooth that variability, results are usually presented as the geometric mean of several readings. The table below shows the geometric mean for September and October at the two sites we sampled. It's interesting to note that half of samples had *Enterococci* levels below the detection limit of 10 MPN/100 ml. However, because there are some Enterococci present and to avoid underestimating the level of contamination, values below the detection limit are set to the detection limit of 10 MPN for calculating the geometric mean. The *Enterococcus* limit for safe contact recreation for a single day is 104 MPN/100 ml and for the 30-day geometric mean, 35 MPN/100 ml—clearly above our measurements.

Dates	Geometric Mean for the Month	
	Piper Park Dock	MRA Dock
September 2020	12 MPN/100 ml	16 MPN/100 ml
October 2020	12 MPN/100 ml	10 MPN/100 ml

Next year, we'll begin testing in April and post the weekly results and the monthly geometric mean on our website. We recommend getting your drinking water from MMWD, but swimming in the creek is not likely to sicken you.

There is no indication that the relatively low level of bacterial contamination in Corte Madera Creek is harmful to wildlife.

We extend thanks to Mark Koekemoer, CMSA Laboratory Director, for training us to collect and handle samples, providing sample bottles, and helping to interpret results. He and his staff have been very helpful in our effort to use science to answer the question: Is it safe to swim in Corte Madera Creek?

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