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Help test Coastside waters during the season’s first rain

First Flush volunteers will collect samples from Pacifica to Half Moon Bay to identify pollutants entering local waterways

By Emma Spaeth
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Volunteers collect samples at the 2025 First Flush event.
Photo courtesy of the San Mateo Resource Conservation District



The San Mateo Resource Conservation District is looking for volunteers willing to brave the rain—and potentially an early morning wake-up call—to help test local waterways during the first major storm of the season.

The annual First Flush program sends teams to creek mouths and ocean outfalls between Pacifica and Half Moon Bay. Volunteers collect water samples as the season's first significant rainfall washes months of accumulated pollutants from streets, sidewalks and other hard surfaces into storm drains, creeks and eventually the ocean.

"It all kind of gets washed out at the same time, especially during that first big storm," said Clifton Herrmann, a water quality specialist with the Resource Conservation District.

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The community science program has operated in San Mateo County since 2003, creating a data set that now spans more than 20 years. Although organizers collect only one sample from each location annually, Herrmann said the results provide a useful snapshot of what may be close to a worst-case water-quality scenario.

The samples are tested for bacteria, heavy metals, nutrients and total suspended solids.

Testing for *E. coli* and *Enterococcus* helps scientists identify possible fecal contamination. Herrmann said the bacteria themselves do not necessarily mean the water will make someone sick. Instead, they indicate that waste from humans or other warm-blooded animals may be present, along with potentially harmful pathogens.

Samples are also tested for copper, lead and zinc. Although those metals occur naturally and can be necessary in very small amounts, higher concentrations can harm aquatic organisms.

Elevated nutrients can contribute to excessive plant and algae growth. As that material decomposes, it can reduce the oxygen available to fish and other aquatic life. Sediment is also monitored because other pollutants can bind to particles and travel through waterways with them.

First Flush results do not immediately identify the source of a pollutant. Because samples are collected near the point where a watershed empties, additional testing is generally needed to trace a problem upstream.

Instead, the long-running program helps the district identify patterns. An isolated high reading may disappear the following year, while consistently elevated results can point to an area that warrants additional attention.

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Herrmann said several sites on the western side of Princeton-by-the-Sea have shown elevated levels of some nutrients and metals during recent years. Those trends can be shared with community partners and landowners as the district explores possible voluntary conservation measures.

Results showing low pollutant levels can be equally valuable. Nutrient concentrations in San Mateo County's First Flush samples have generally remained low, particularly compared with some neighboring counties.

"It's not always about the bad," Herrmann said. "Sometimes it's important to know that there's some good too."

Volunteers allow the district to collect samples across the Coastside within roughly the same window of time, helping teams capture the surge of runoff near the beginning of a storm. Attempting to reach every site with district staff alone would take longer and could miss that critical period.

Sampling day can arrive with little certainty. Volunteers may be called out in pouring rain, before dawn, late at night, on a weekend or even during a holiday. Last year, teams initially prepared for a 6 a.m. start, only for the expected rain to arrive around 3 p.m., requiring organizers to rearrange much of the volunteer roster.

“It really takes a village,” Herrmann said. “We just need people waiting in the wings.”

Volunteers will work in five teams, with each visiting between two and four sites. In addition to filling sample bottles, participants will record water temperature and pH, photograph conditions and document observations such as trash or an oily sheen on the water.

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The district provides rain gear, although volunteers may bring their own. Organizers inspect sampling sites for safety and tell participants to skip any location where conditions feel unsafe.

No previous scientific experience is required. A virtual training session will be held at 6:30 p.m. Wednesday, Aug. 26, covering the program’s purpose, sampling methods and event logistics. The session will be recorded for those who cannot attend live, and additional in-person training opportunities are planned for September and early October.

The sampling event will take place after the first significant rain of the season, which organizers expect will most likely arrive in October. Volunteers will receive weather updates as possible storms approach and a final call when sampling is scheduled to begin.

“We would not be able to make this happen every year without the volunteers,” Herrmann said. “It allows us to not only identify areas where we may want to follow up and identify pollution sources, but it also gives us a good sense of where we may be doing all right.”

To register for the Aug. 26 virtual training, visit the First Flush volunteer training page on Eventbrite. Questions may be directed to FirstFlush@sanmateoRCD.org.

Emma Spaeth

Publisher

Emma Spaeth is the publisher and interim editor of Coastside News. A Half Moon Bay native, she earned a bachelor's degree in public relations from the University of Oregon and first joined Coastside News in 2019 as a college intern. After graduating, she returned to the newsroom as a sports and community writer.

Along the way, Emma spent two years living in Spain, where she taught English while continuing to contribute to Coastside Magazine from abroad. In 2024, she returned to the Coastside and stepped into the role of publisher. Emma recently also took on duties as interim editor.

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