

Category III - Water Quality

Quantitative PCR Assays for Specific Host Sources of Fecal Pollution for Test Watersheds

PRINCIPAL INVESTIGATOR:

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EXECUTIVE SUMMARY:

The fresh and marine waters of the California coast provide essential resources for the agriculture and fishing industries, recreation, drinking water, and wildlife habitat. The quality and safety of hundreds of watersheds in California are threatened by point and non-point sources of fecal pollution from human and non-human hosts, including wastewater treatment, sewage lines, urban and agricultural runoff, domestic animals and wildlife. Once elevated levels of fecal pollution have been documented in a watershed via standard microbiological assays, the specific source(s) of the pollution must be identified in order to effectively assess health risks and pursue remediation, i.e. the reduction or elimination of watershed pollution. Watershed managers and agencies in California spend considerable financial resources on the identification of host sources of fecal pollution and remediation of watersheds in order to make progress toward complying with the Clean Water Act.

We propose to develop new, highly advantageous assays to identify sources of fecal pollution in watersheds, based on the application of a novel, high throughput biotechnology method to newly developed genetic targets in *Enterococcus*. We will apply the developed and validated assays to identify and determine the levels of specific host sources of fecal pollution in the San Pedro Creek Watershed in Pacifica, CA. The San Pedro Creek Watershed provides habitat for numerous federally listed endangered or threatened species. The Creek mouth is part of Pacifica State Beach, the most popular surfing and recreational beach between Santa Cruz and San Francisco. The San Mateo County Health Department has permanently posted the mouth of the Creek as a public health risk and as unsafe for human use, and considers San Pedro Creek the worst polluted perennial stream on the San Mateo County Coast. Pollution from the Creek contributes to contamination and closures of Pacifica State Beach.