



Microbiological Water Quality Investigation for Las Palmas Creek, Hope Ranch, Santa Barbara, CA

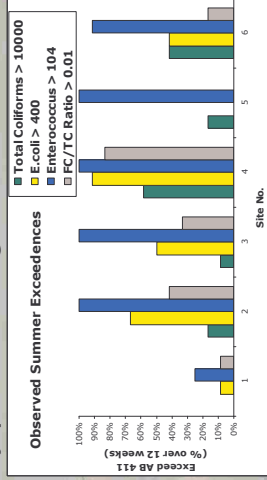
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Project Questions

- What are the risks to human health, especially recreational users of Hope Ranch Beach, result from the water quality along Las Palmas Creek?
- How might the Beach Committee best manage the creek to mitigate this risk, based on the probable sources of contamination?

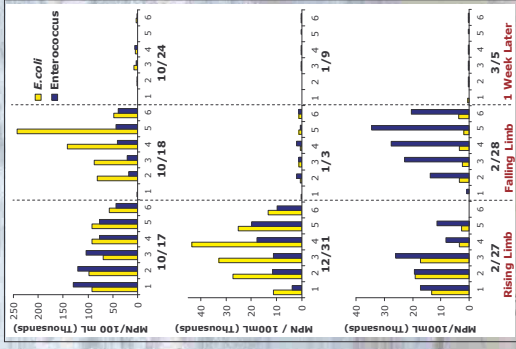
Summer Findings

- Mean FIB levels for surf zone were below AB411 standard
- Mean FIB levels for site 4 were above AB411
- PCR study for *Rhodococcus* indicates a probable herbivore source of fecal contamination at many points along the creek



Winter Findings

- FIB levels 1000x higher than summer mean levels at the beginning of the storm
- FIB levels lower than summer mean levels 1 week after storm
- High FIB levels were associated with high clay content
- PCR study for *Rhodococcus* captured more positive signals than in summer
- *Cryptosporidium* found at creek mouth during first flush, but not specific to *C. parvum*



1st, 2nd, and 3rd Flush FIB Concentrations by Date

Field Methods

- Water, Soil and Sediment samples:
 - 6 sites
 - 2 seasons (dry/wet)
- Water quality parameters



Risk Assessment

- Relative Risk of Ocean Swimming:
 - Baseline (summer): 2 x the risk posed by clean water
 - Rising Limb (winter): 5 x the risk posed by clean water

Recommendations

- Restrict recreation in creek and ocean to promote stewardship
- Educate local residents through public/private programs
- Additional study: test drainage pipes (or runoff from private properties) as potentially significant sources of FIB
- Monitor trail use to establish a cost-effective program of trail maintenance and cleanings

Lab Methods

- Fecal Indicator Bacteria (FIB)
 - Enterococcus
 - *E. coli*
 - Total Coliform
- Polymerase Chain Reaction (PCR)
 - *Bacteroides prevotella* (Human)
 - *Rhodococcus coprophilus*
 - *Bacteroides prevotella* (Horse)
 - *Cryptosporidium parvum*
- Gel Electrophoresis (presence/absence)

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