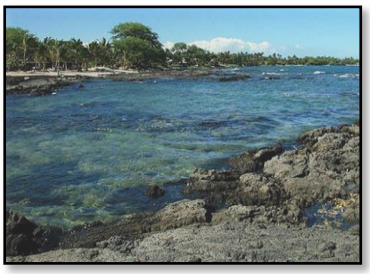
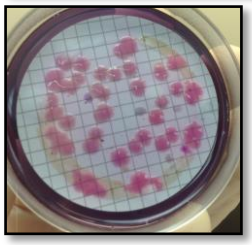


Spatial Distribution and Effects of Sewage on Puakō's Coral Reefs

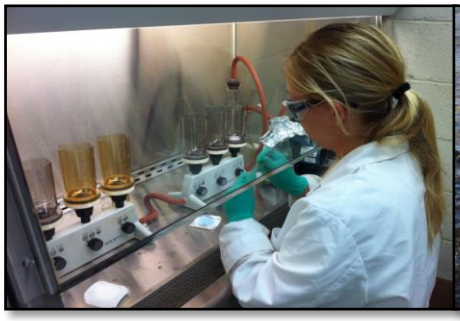
Goals

- Use chemical and biological tools to determine if sewage is entering coastal waters
- Determine if sewage is impacting water quality
- Assess coral reef community-level response to sewage



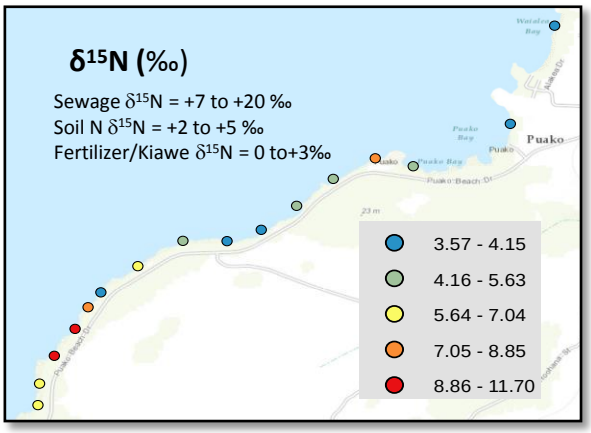
Objectives

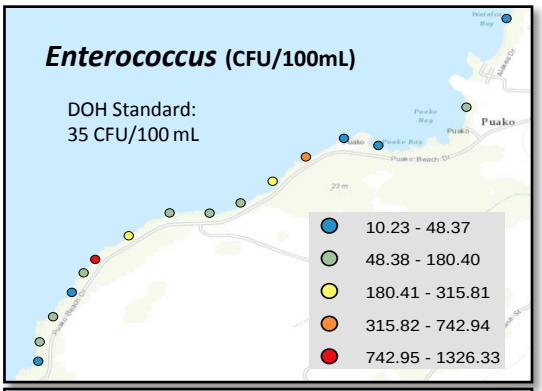
1. Dye Tracer Studies: Use dye to document connection between cesspools and ocean
2. $\delta^{15}N$ Seaweed Measurements: Evaluate presence and spatial extent of sewage near- and offshore
3. Fecal Indicator Bacteria & Nutrient Measurements: Determine if DOH water quality standards are exceeded
4. Benthic Community Responses: Assess responses of corals, fishes, and macroinvertebrates to wastewater

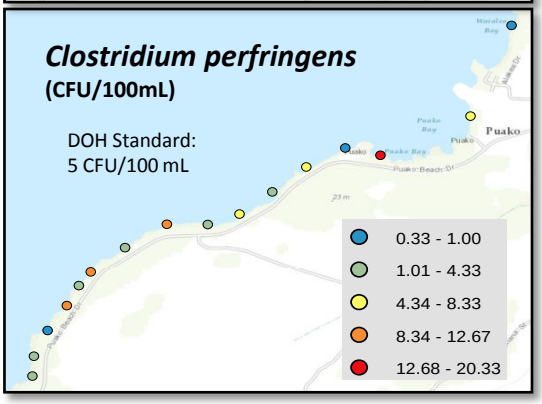


Findings

Dye travel time was 3 days from cesspool to ocean, only observed at low tide and localized



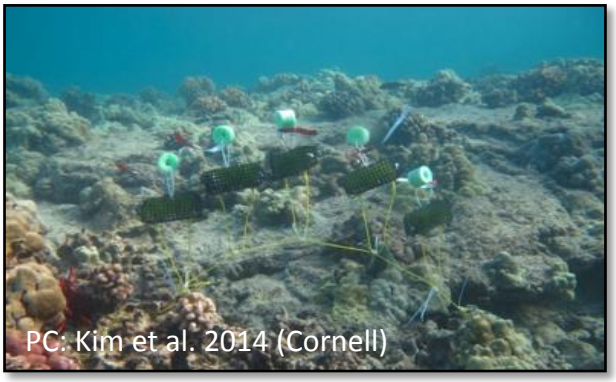




Fecal indicator bacteria (*Enterococcus & C. perfringens*) and $\delta^{15}N$ seaweed values indicate sewage presence at multiple locations

Remaining Work

- Two more dye tracer experiments
- Nutrient, bacteria, and $\delta^{15}N$ seaweed measurements including offshore seaweed cage experiments
- Coral and fish sampling



Seaweed cage experiments

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