



CALIFORNIA BACTERIA SUMMIT

Understanding the Now: Overview of Bacteria Sources

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Bacteria Sources

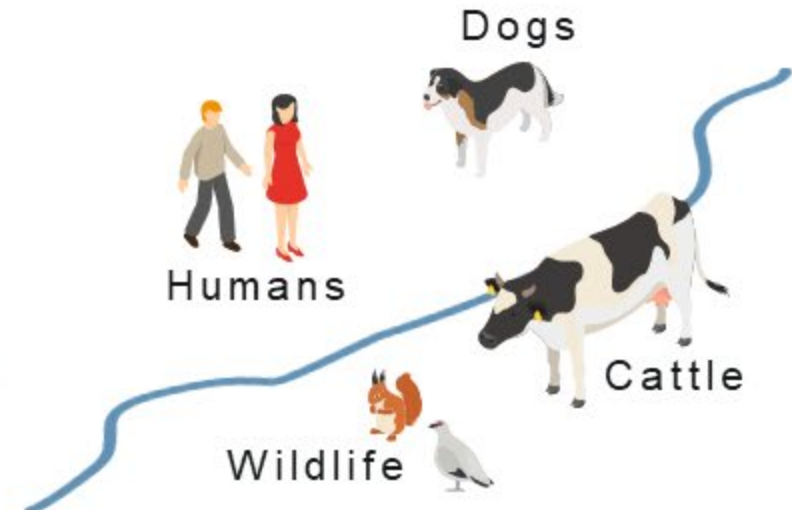
What we mean depends on your perspective



Permitted Sources



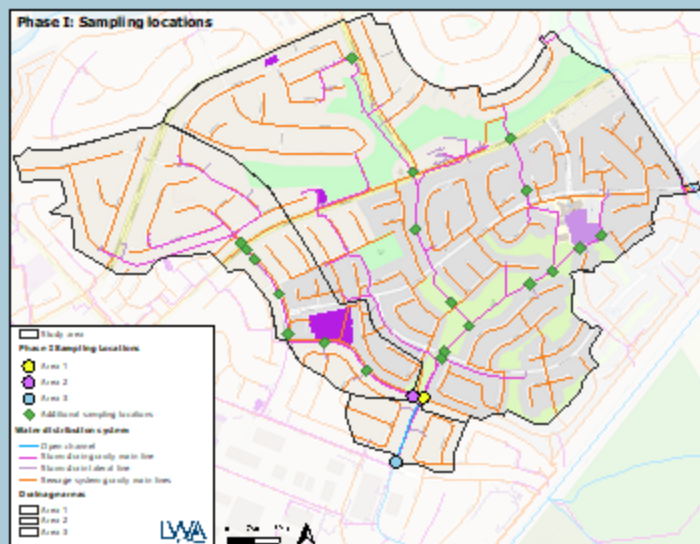
Source Contributing to a Discharge



Fecal Matter Sources

How you define sources impacts how you think about implementation

Where is the Bacteria Coming From?



What is the Source of Indicator Bacteria?



What is the Source of Human Waste?



Many Studies Conducted to Understand Sources of Bacteria

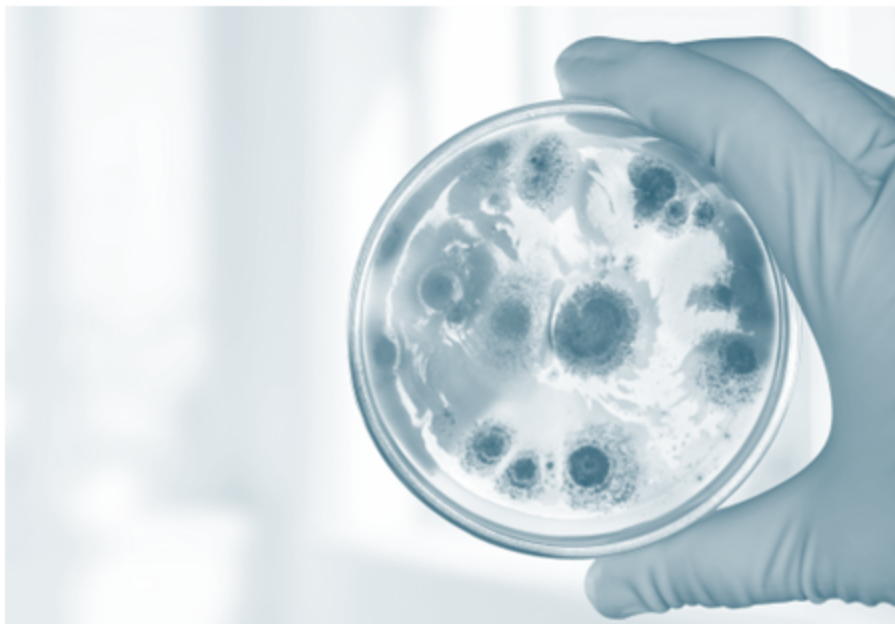
- Reference Reach Studies
 - Indicator Bacteria Concentrations from areas without human influence
- Sources of Indicator Bacteria
 - Where are indicator bacteria concentrations highest?
- Microbial Source Tracking (MST)
 - Is the indicator bacteria coming from humans, dogs, birds, etc.

- Reference reaches exceed objectives

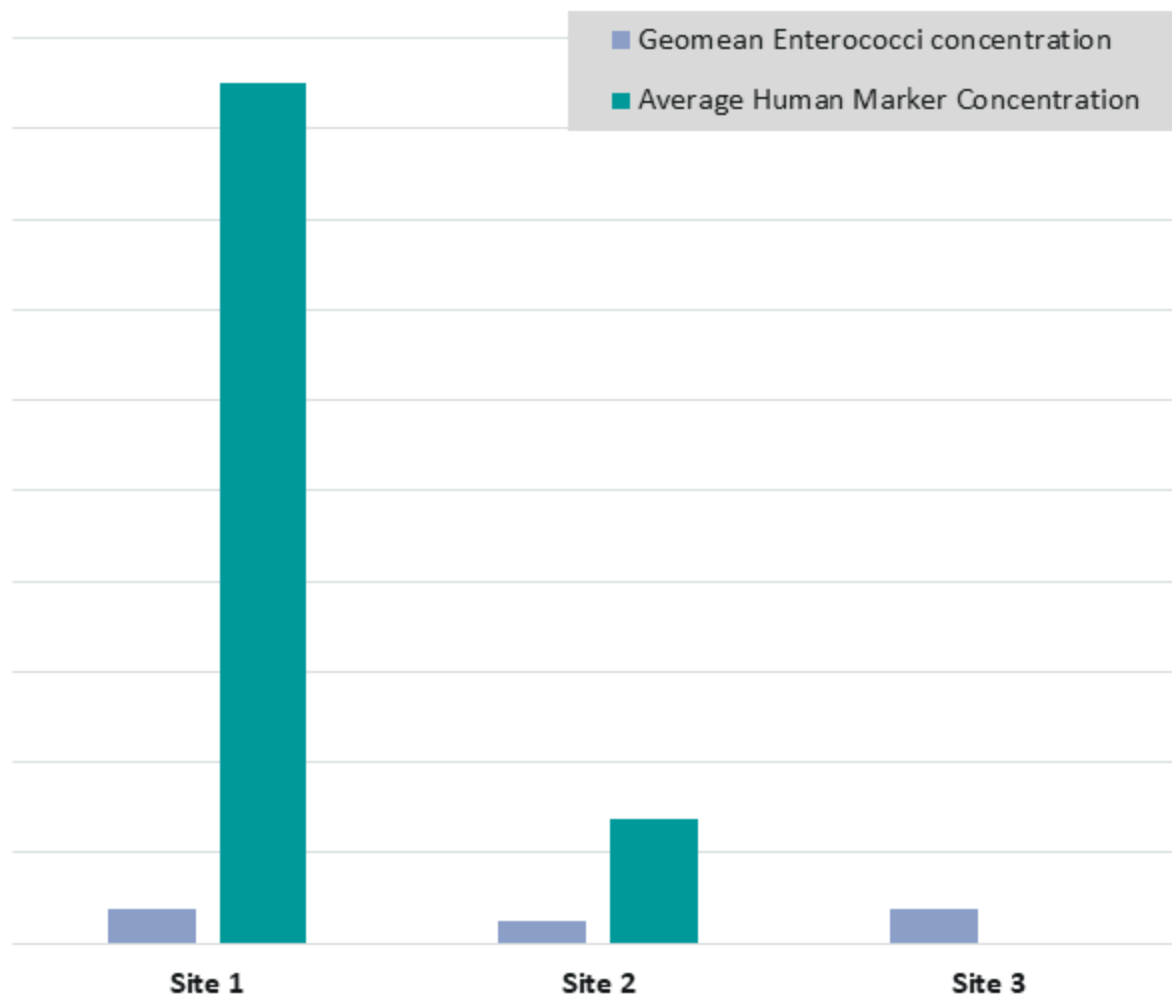
- Human markers often found during MST studies
 - 80% of studies reviewed

- Bird markers commonly found at beaches

Actions to Address Risk May Not Be Clear Without Understanding the Source of the Bacteria



- Sites with similar, low dry weather Enterococci concentrations
- Wide range of human marker concentrations



Example Dry Weather Site Data from Bight '13

PERMITTED SOURCES

SOURCES OF INDICATOR BACTERIA

Wastewater

Stormwater

Agriculture

Wastewater
collection
system

Humans

Cattle, dog, pigs,
horses

Some other
wildlife

Environmental
sources

SOURCE CONTRIBUTING TO DISCHARGE

Where is it coming from?

What is the cause?

Increasingly hard to characterize

Increasingly hard to identify

Key Takeaways

Source can mean different things to different people

For bacteria, how we define source and what sources we want to control can significantly impact implementation approaches

Many studies have been done in California (and elsewhere) trying to better understand sources

Making the linkage between the studies and implementation has been challenging



Thank You

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