



SAN MATEO  
RESOURCE  
CONSERVATION  
DISTRICT

# First Flush 2021 Water Quality Results

Nicole Schmidt  
Water Quality Program Coordinator

# Highlights



What we measured



Key findings



Solutions



Questions



# Resource Conservation District



Water



Climate



Wildlife



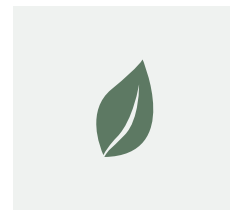
Agriculture



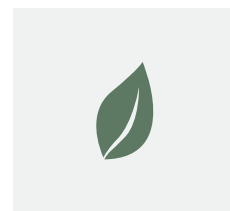
Fire and Forest Health



# What is First Flush?

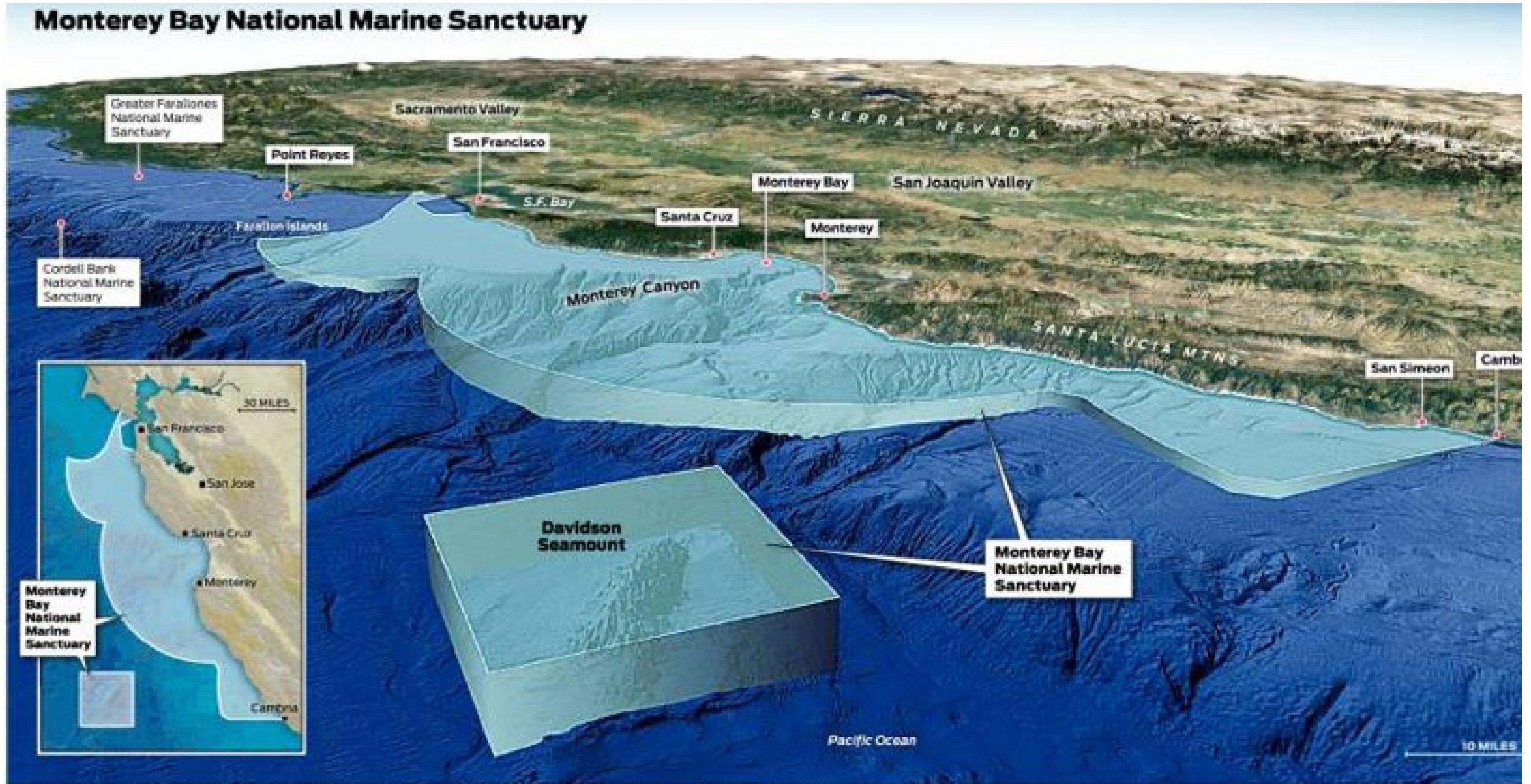


First big rain of the season



Stormwater runoff enters creeks storm drains and the ocean

# First Flush



Sources: Underwater map created by National Oceanic and Atmospheric Administration-Monterey Bay National Marine Sanctuary using Google Earth Pro, [mapnews.com/CH&R](http://mapnews.com/CH&R)

# COMMUNITY BASED



# CITIZEN SCIENCE



# VOLUNTEER EVENT





Sewer Authority Mid-Coastside  
**SAM**



PARTNERS &  
SPONSORS



# Why is monitoring First Flush important?



Helps identify what pollutants are of greatest concern and where



Provides information to support informed water quality management decisions



Tells us how pollution at sites are changing overtime



# What do we test for?



Pollutant	Potential Sources	Effects
Fecal Indicator Bacteria ( <i>E. coli</i> , <i>Enterococcus</i> )	Feces of warm blooded animals (humans, dogs, horses, wildlife etc.)	Indicator for pathogens that harm human health
Nutrients (nitrates and orthophosphates)	Fertilizer, pesticides, detergent	Ecosystem and recreation impacts
Metals (copper, zinc, lead)	Gutters, roofs, brake pads, industrial waste, paint, fire	Human health impacts, reduced reproduction of marine mammals
Total suspended solids	Construction, erosion, agricultural runoff, fires	Impacts water column and is an indicator of presence of other contaminants in the water
Physical measurements (electric conductivity, temperature, observations)	Rain influences, minerals, salts	Conductivity tells us if we captured the rain, high temperatures has ecological impacts, observations give context to data

## Pollutant

## Potential Sources

## Effects

Fecal Indicator Bacteria  
(*E. coli*, *Enterococcus*)

Feces of warm-blooded  
animals (humans, pets,  
wildlife)

Indicator for pathogens  
that harm human health



# Pollutant

# Potential Sources

# Effects

Nutrients (nitrates and orthophosphates)

Fertilizers, pesticides, detergents

Eutrophication, algae blooms



# Pollutant

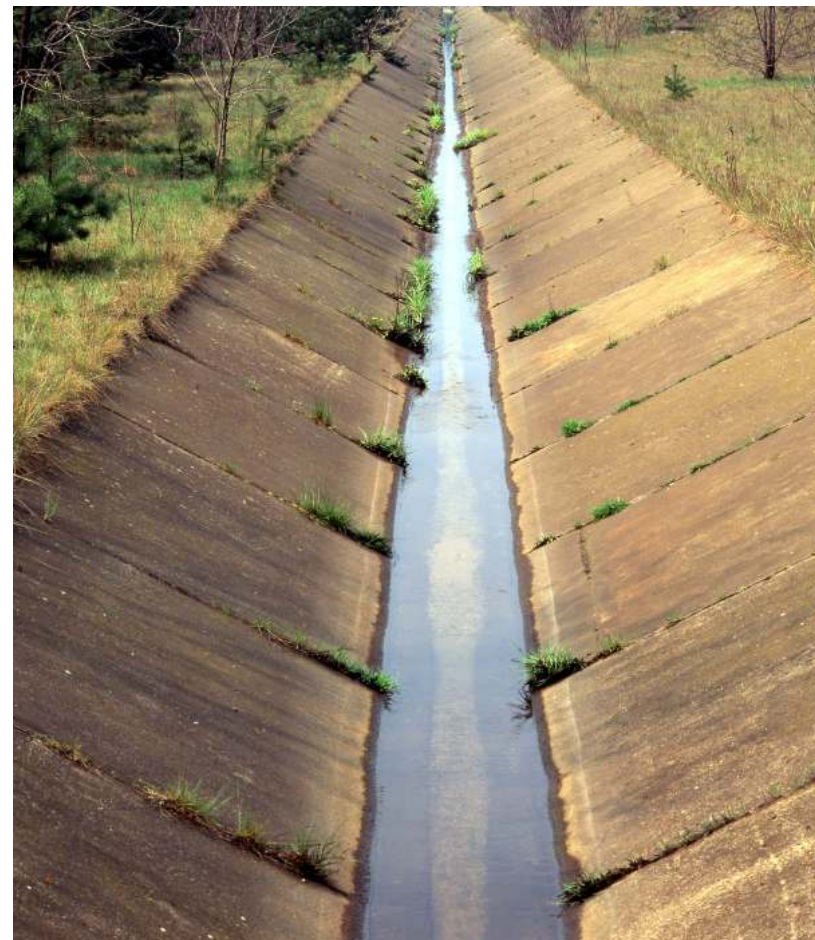
# Potential Sources

# Effects

Metals (copper, zinc, lead)

Gutters, roofs, brake pads, industrial waste, paint, fire

Human health impacts, reduced reproduction of marine mammals



# Pollutant

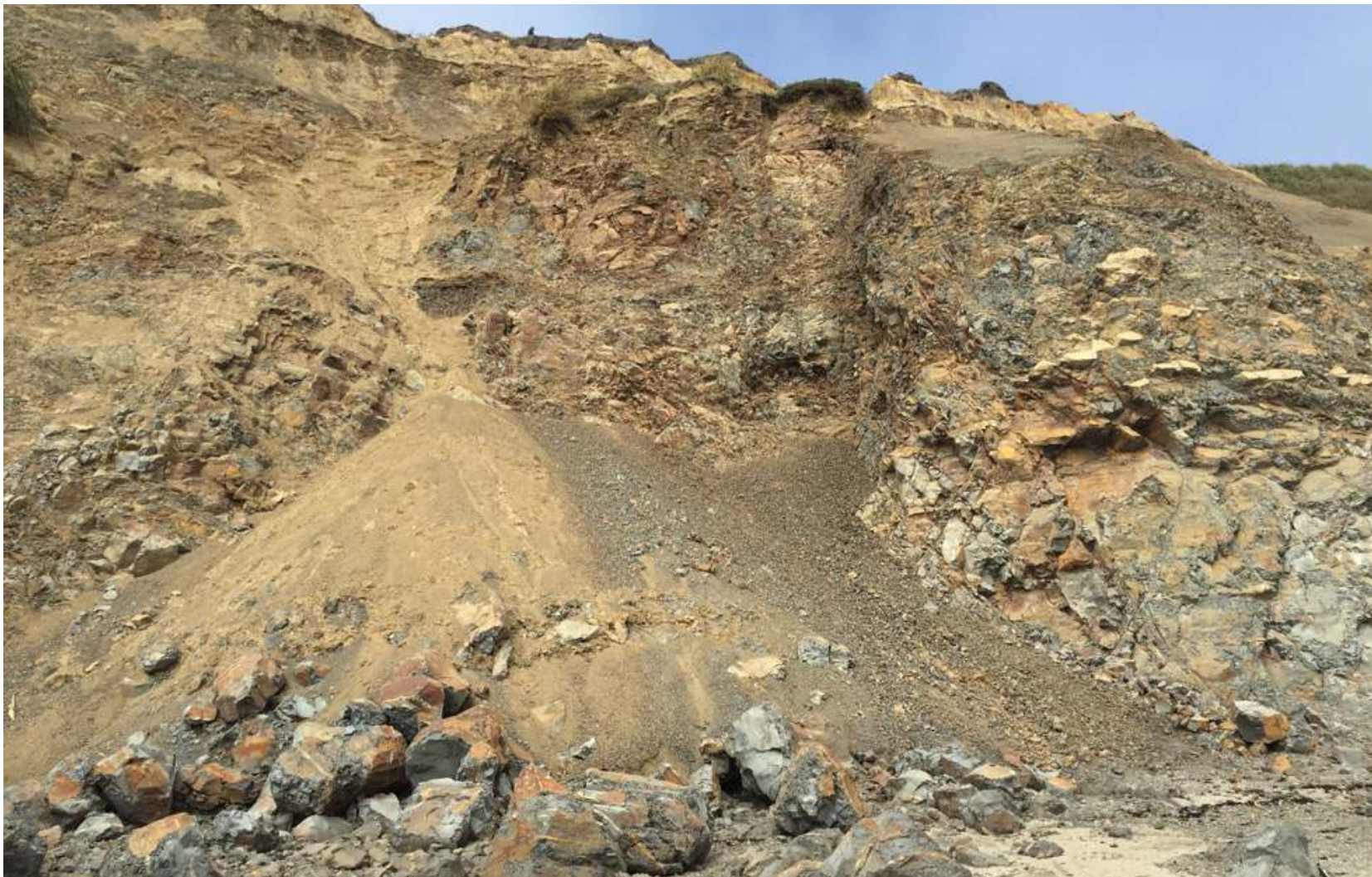
# Potential Sources

# Effects

Total suspended solids

Construction, erosion, agricultural runoff, fires

Water column visibility



# "Pollutant"

# Potential Sources

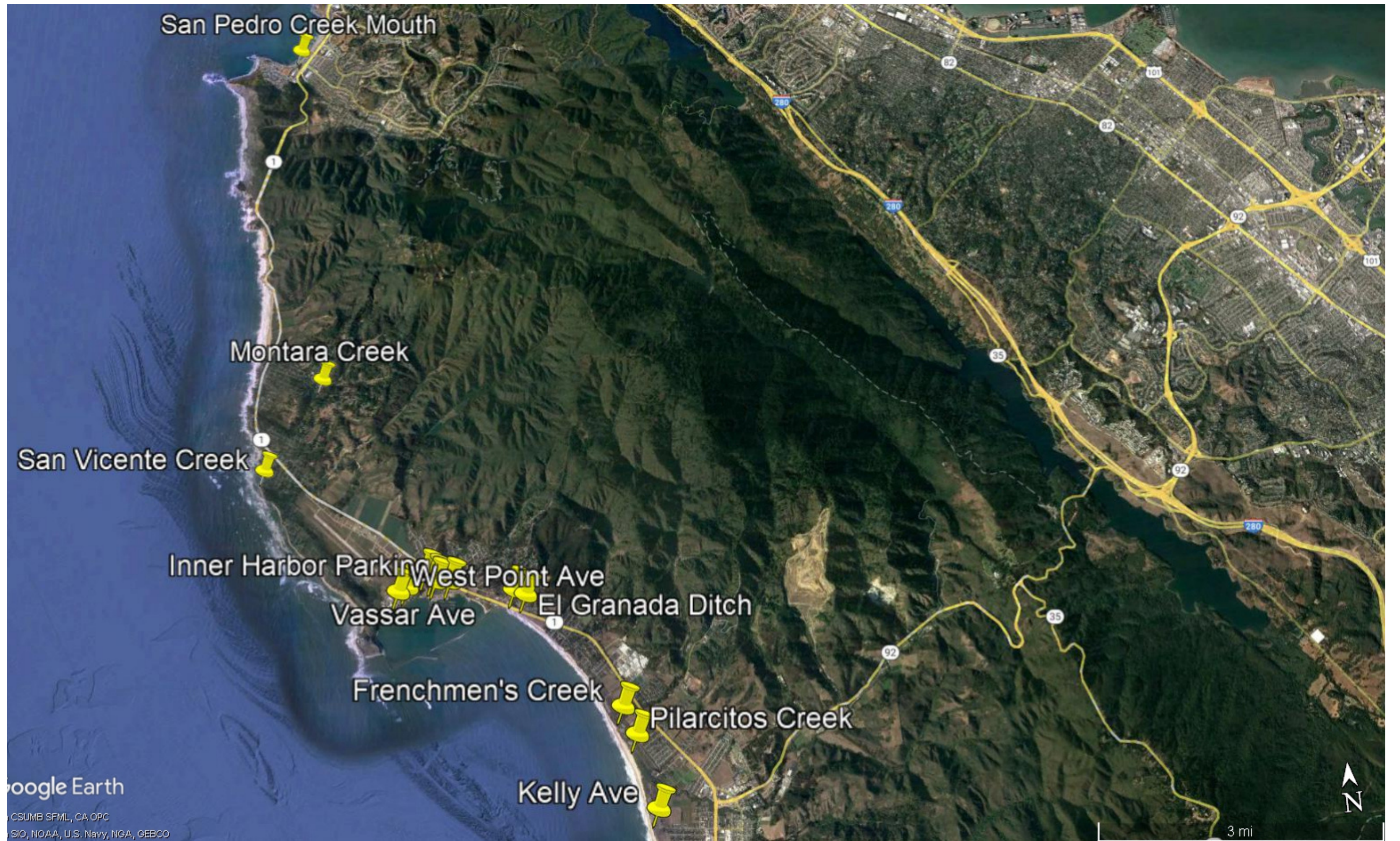
# Effects

Physical characteristics (electric conductivity, temperature, pH observations)

Rain influences, minerals, salts

Conductivity tells us if we captured the rain, high temperatures has ecological impacts, observations give context to data





San Pedro Creek Mouth

Montara Creek

San Vicente Creek

Inner Harbor Parking

West Point Ave

Vassar Ave

El Granada Ditch

Frenchmen's Creek

Pilarcitos Creek

Kelly Ave

Google Earth

CSUMB SFML, CA OPC  
SIO, NOAA, U.S. Navy, NGA, GEBCO

3 mi





# Key Findings

Above recommended amounts:

- *Enterococcus* (13/13 sites)
- *E. coli* (12/ 13 sites)
- Orthophosphates (9/13 sites)
- Copper (3/ 13 sites)

No concerns observed:

- Nitrate
- Lead
- Zinc
- Total suspended solids

San Pedro Creek Mouth

Montara Creek

San Vicente Creek

Inner Harbor Parking

West Point Ave

Vassar Ave

El Granada Ditch

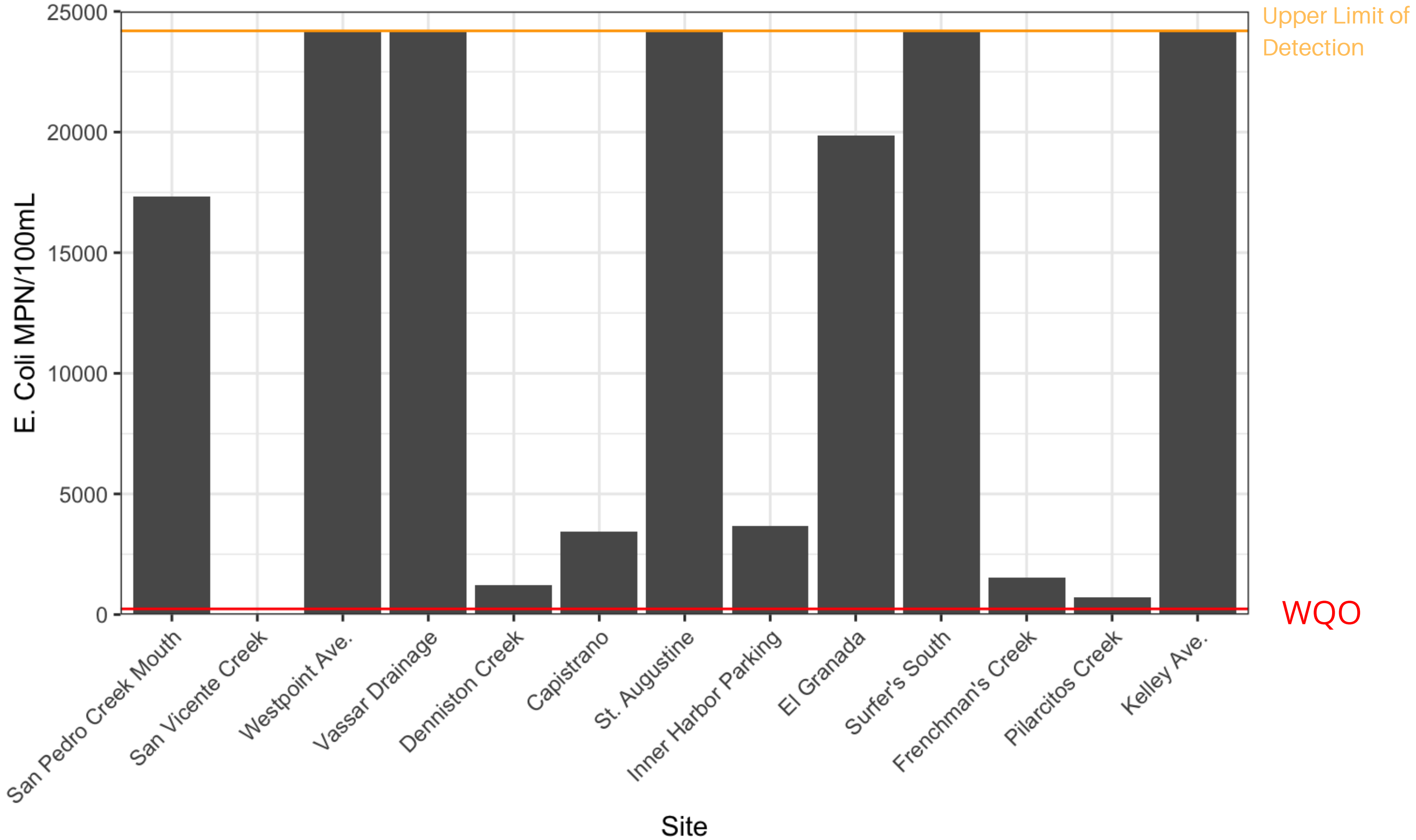
Frenchmen's Creek

Pilarcitos Creek

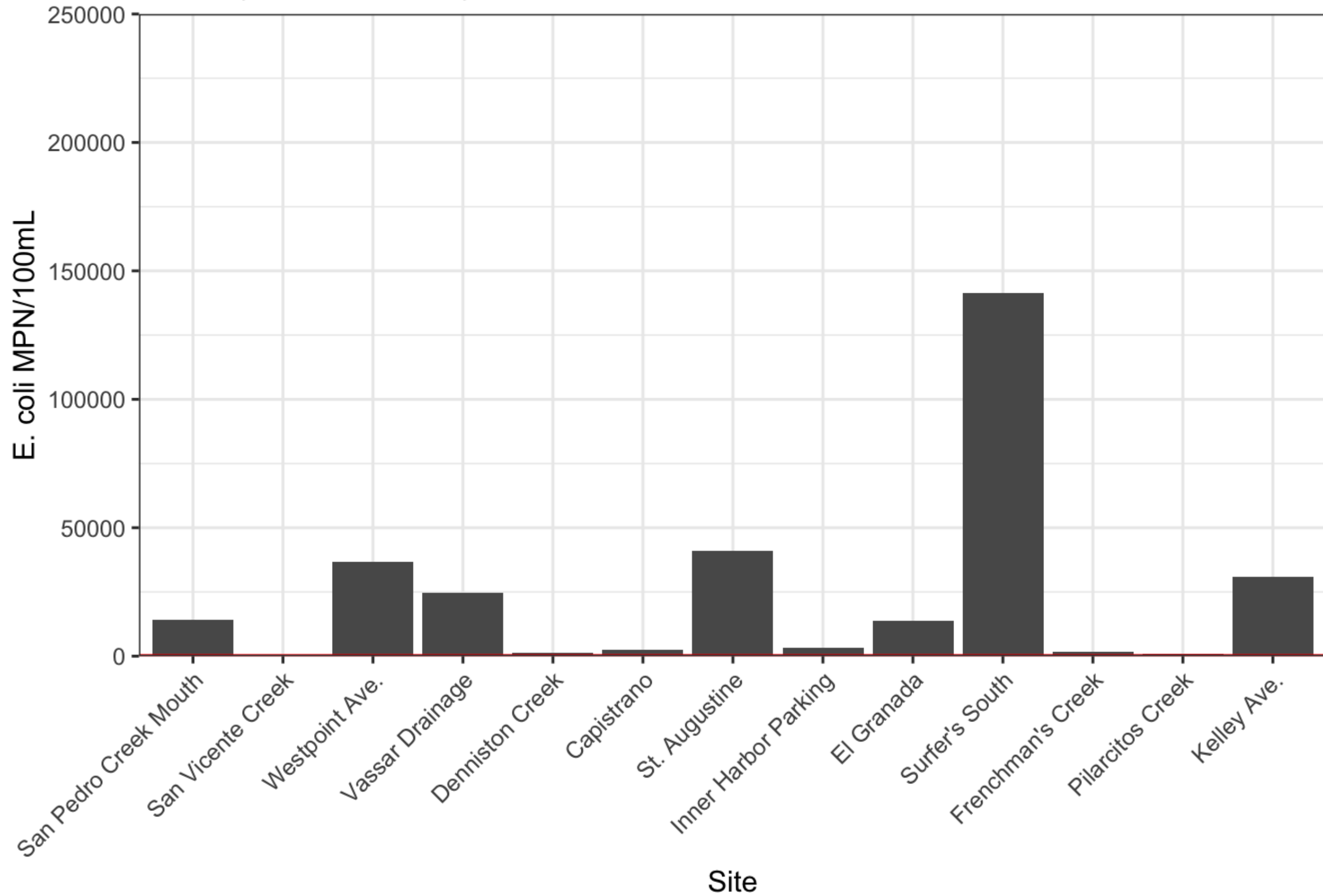
Kelly Ave



# E Coli (1:10 Dilution)



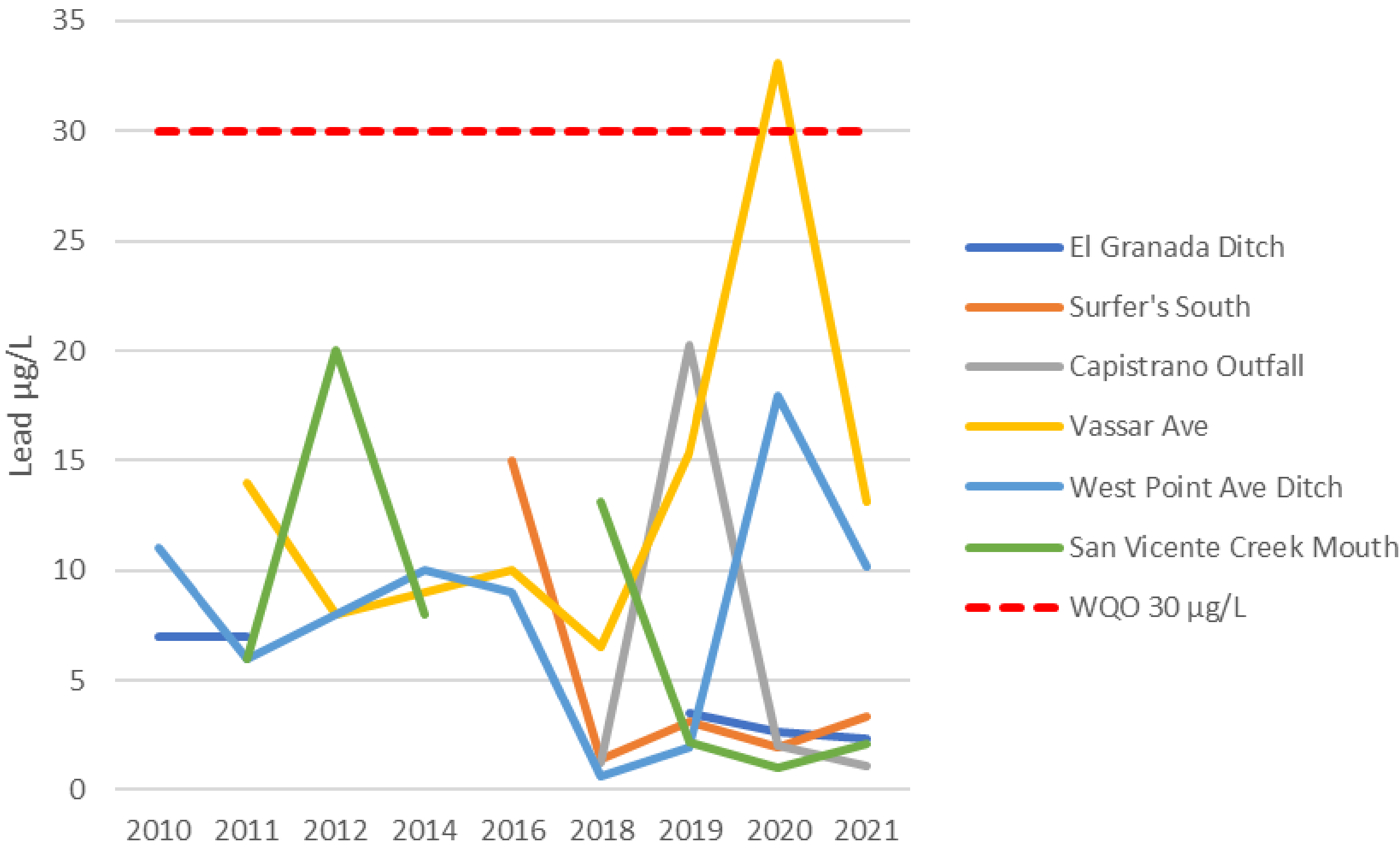
# E coli (1:100 Dilution)



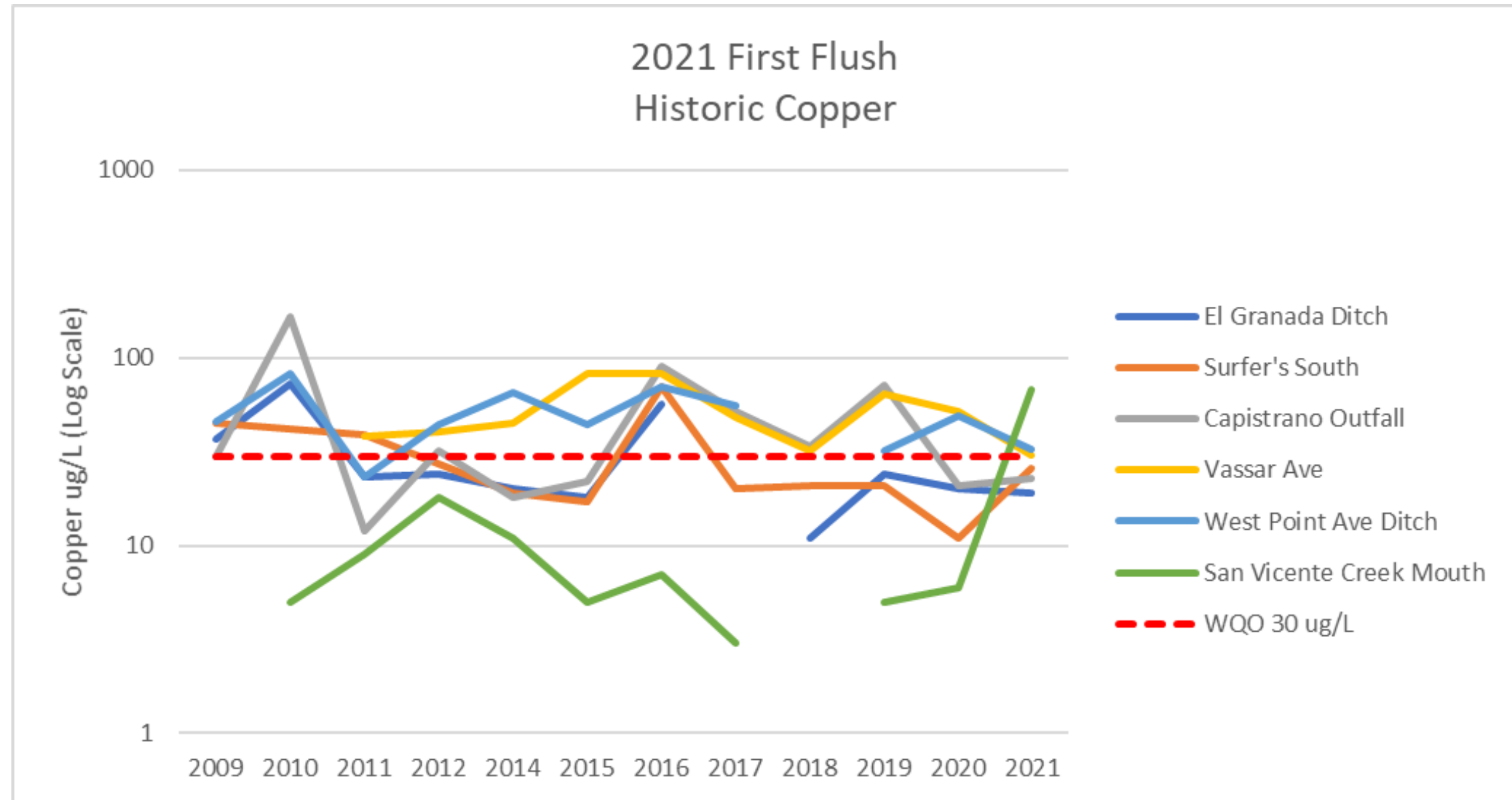
# Vassar Drainage



## 2021 First Flush Lead



# San Vicente



# Results Summary



Surfer's South had the highest concentration of *E. coli* (141,360 MPN/100mL) and *Enterococcus* (241,960 MPN/100mL).



West Point Avenue had the highest concentration of orthophosphate (0.5 mg/L)



San Vicente had the highest concentration of copper (67.5 ug/L).

FIRST FLUSH  
2021



Collect your roof water in a **RAIN BARREL**.



**Cost:** LOW  
**Installation difficulty:** EASY  
See page 24

Plant a **RAIN GARDEN** in your landscape.



**Cost:** LOW to MODERATE  
**Installation difficulty:** EASY to INTERMEDIATE  
See page 27

Install a **WATERBAR** on your driveway.



**Cost:** MODERATE  
**Installation difficulty:** INTERMEDIATE  
See page 35

Use **PERVIOUS PAVERS** when renovating your patio.



**Cost:** MODERATE - HIGH  
**Installation difficulty:** INTERMEDIATE  
See page 30

What can  
you do?





# Slow it. Spread it. Sink it!

A Homeowner's Guide to Greening Stormwater Runoff

Practical and Eco-Friendly Ways to Protect  
Your Property and the Environment from  
the Effects of Stormwater Runoff



# Questions?

Contact me:

Nicole Schmidt  
nicole@sanmateoRCD.org

Additional RCD resources:

[www.sanmateoRCD.org](http://www.sanmateoRCD.org)

[www.facebook.com/sanmateoRCD](https://www.facebook.com/sanmateoRCD)

[www.instagram.com/sanmateoRCD](https://www.instagram.com/sanmateoRCD)

Youtube: sanmateoRCD



SAN MATEO  
RESOURCE  
CONSERVATION  
DISTRICT