2023 - 2024 First Flush Water Quality Results

SAN MATEO RESOURCE CONSERVATION DISTRICT

MONTEREY BAY NATIONAL MARINE SANCTUARY

Clifton Herrmann
RCD Water Quality Specialist

Resource Conservation District

What is First Flush?

Concept

- First big rain event of the wet season
- Contaminants that were on land are washed into the ocean

Program

- Volunteer WQ monitoring
- Occurs once annually
- “Worst case” scenario for WQ

Why sample First Flush?

- Helps identify what pollutants are of concern (or not) and where
- Helps us make informed decisions

COMMUNITY SCIENCE

VOLUNTEER EVENT

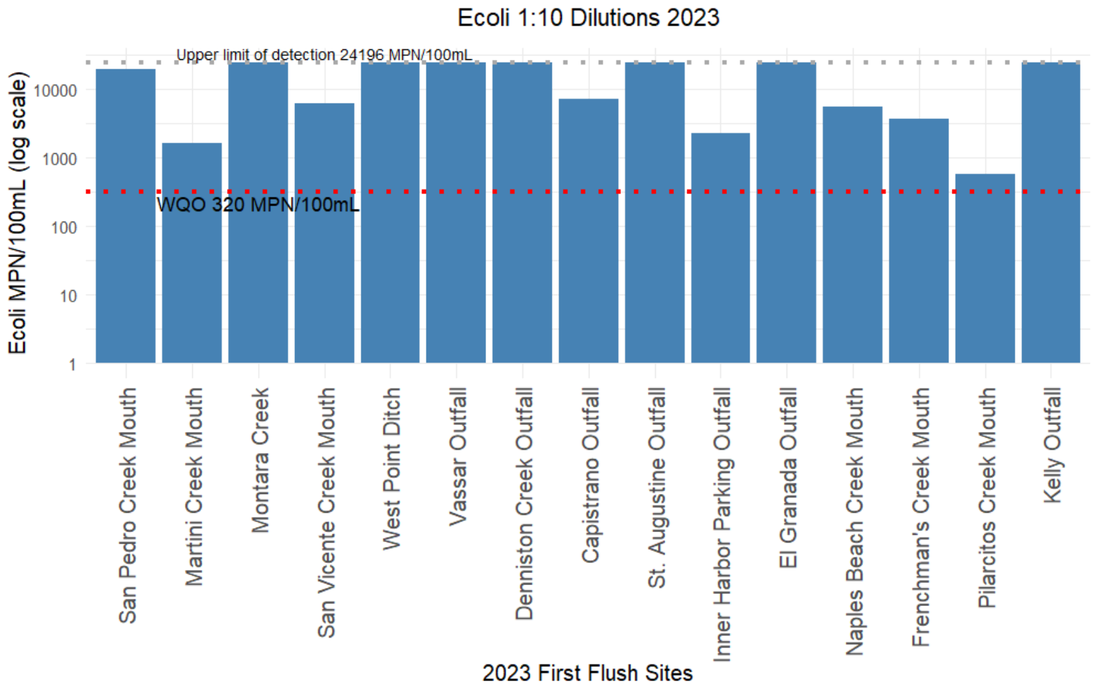
What did we test for?

- Fecal Indicator Bacteria (FIB)
- Nutrients (Nitrates and Orthophosphates)
- Metals (Copper, Zinc, and Lead)
- Total Suspended Solids

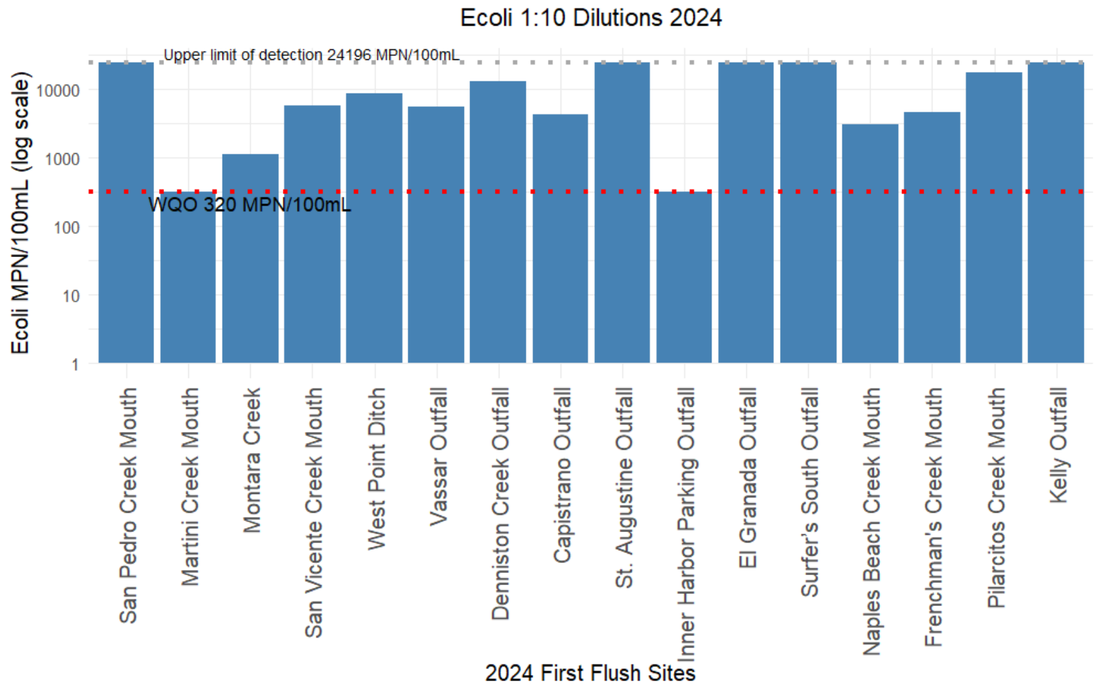
Pollutant	Potential Sources	Effects
Fecal Indicator Bacteria (*E. coli*, *Enterococcus*)	Feces of warm-blooded animals (humans, pets, wildlife)	Indicator for pathogens that harm human health

FIB Results – *E. coli*

2023

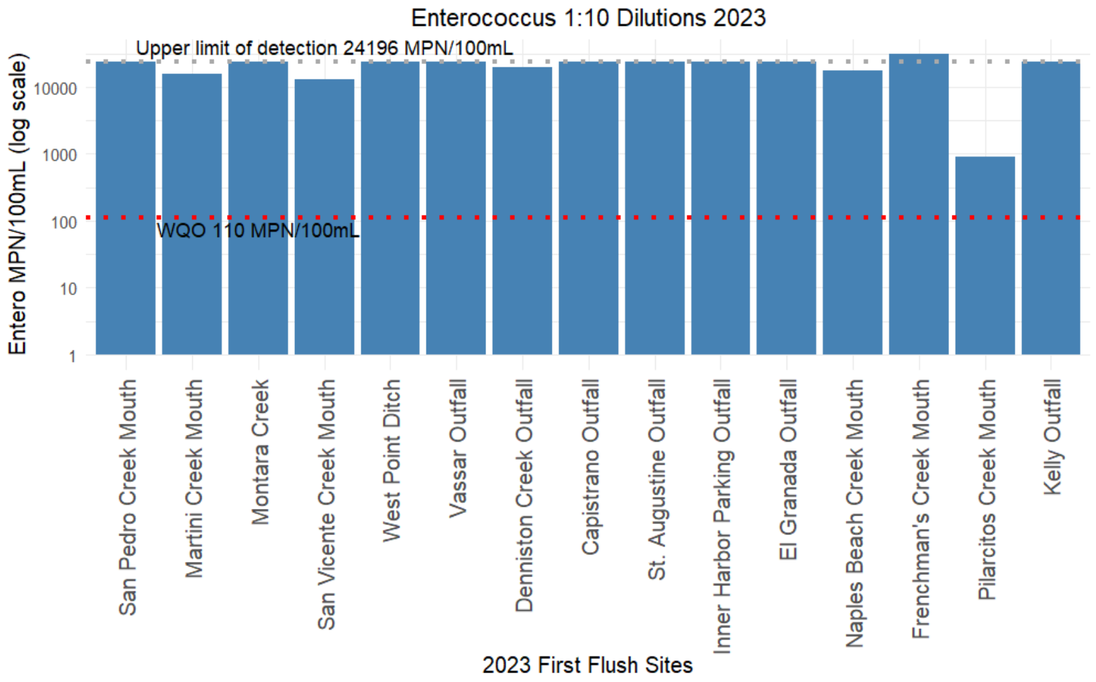


2024

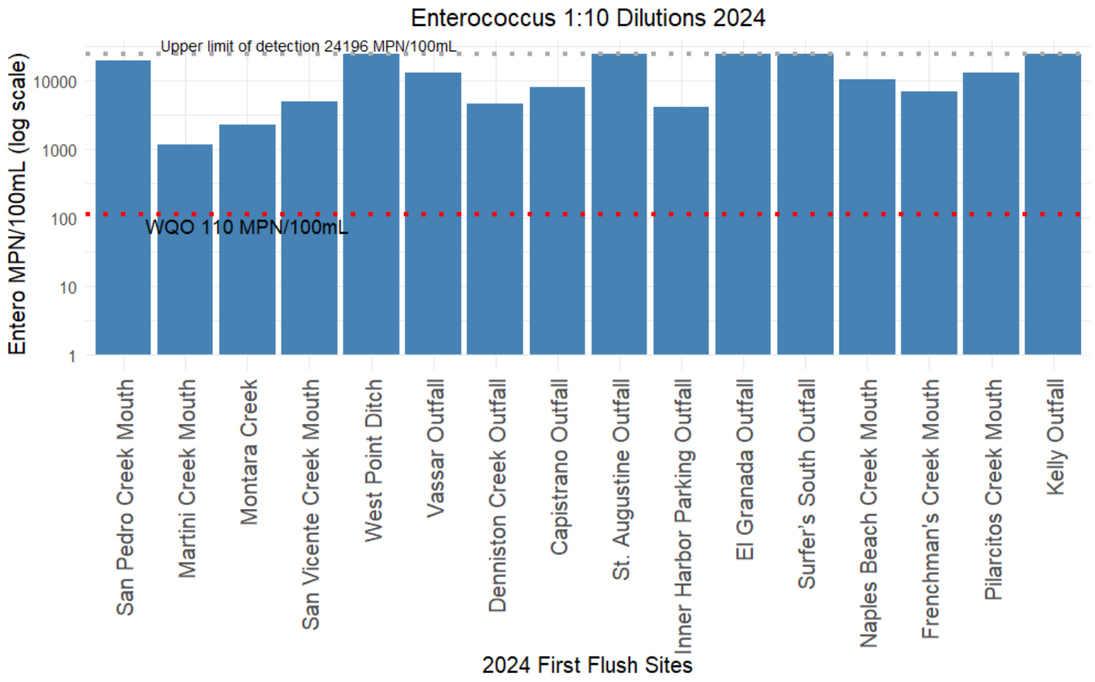


FIB Results – *Enterococcus*

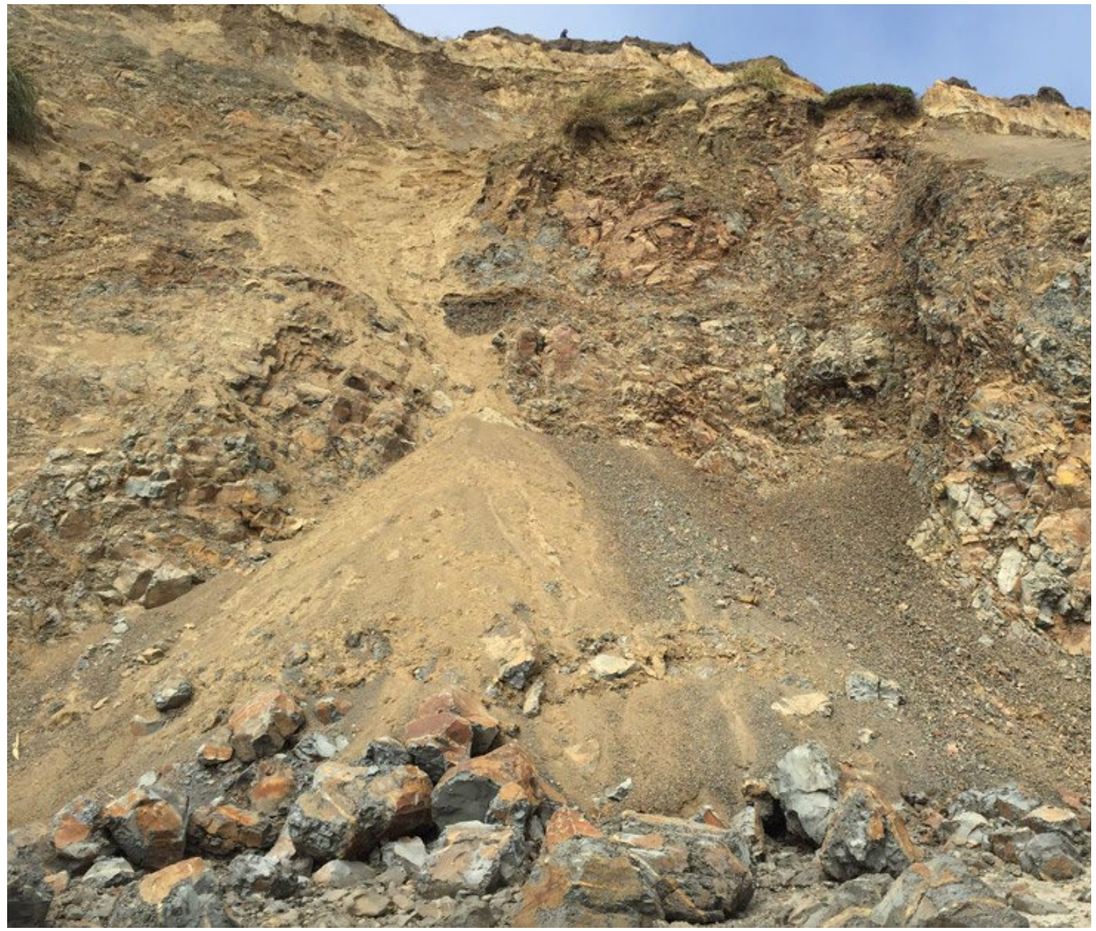
2023

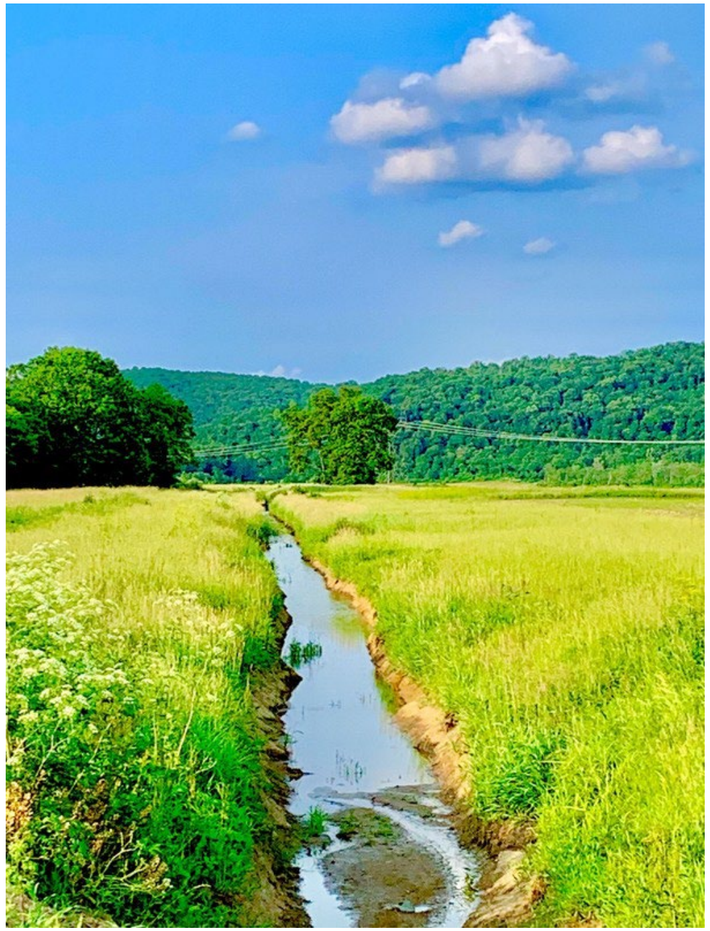


2024



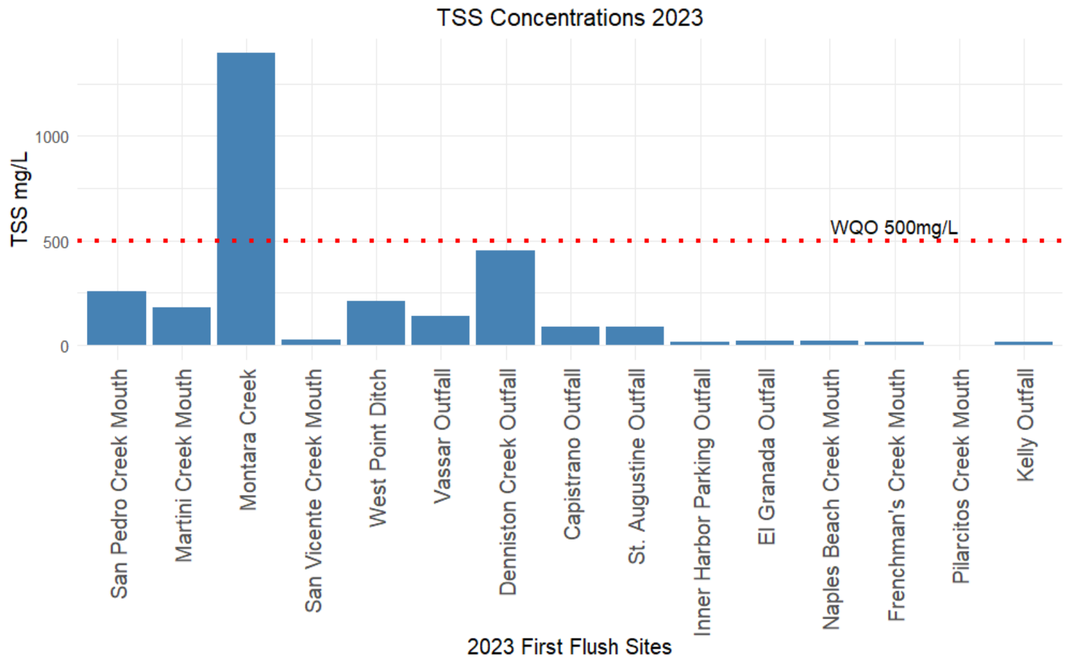
Pollutant	Potential Sources	Effects
Total suspended solids	Construction, erosion, agricultural runoff, fires	Water column visibility, aquatic organism respiration



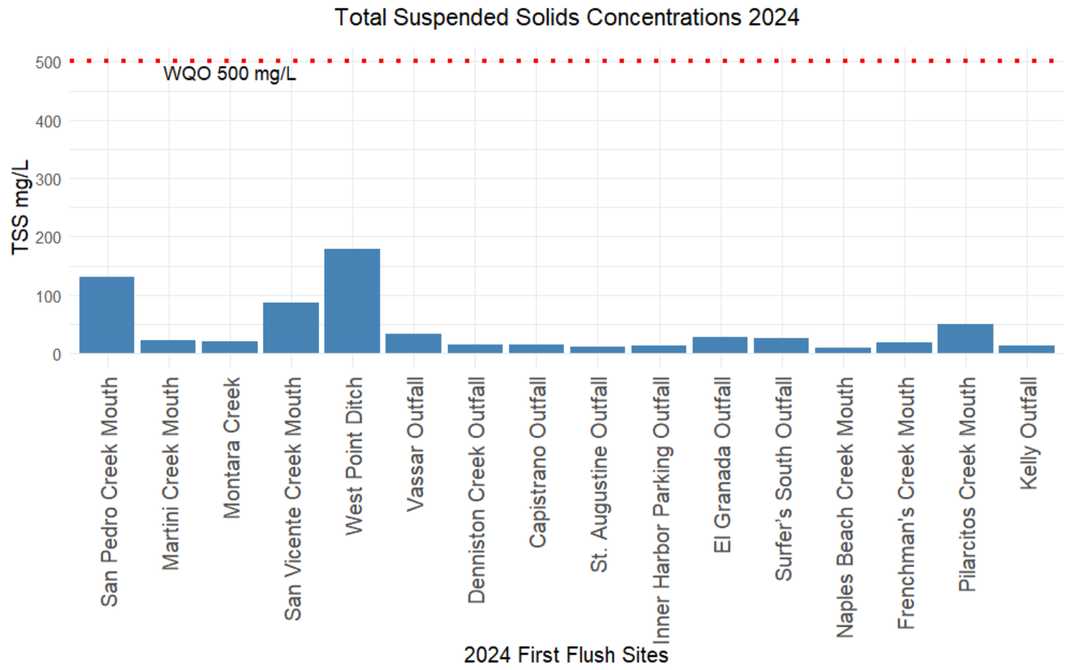


Total Suspended Solids

2023



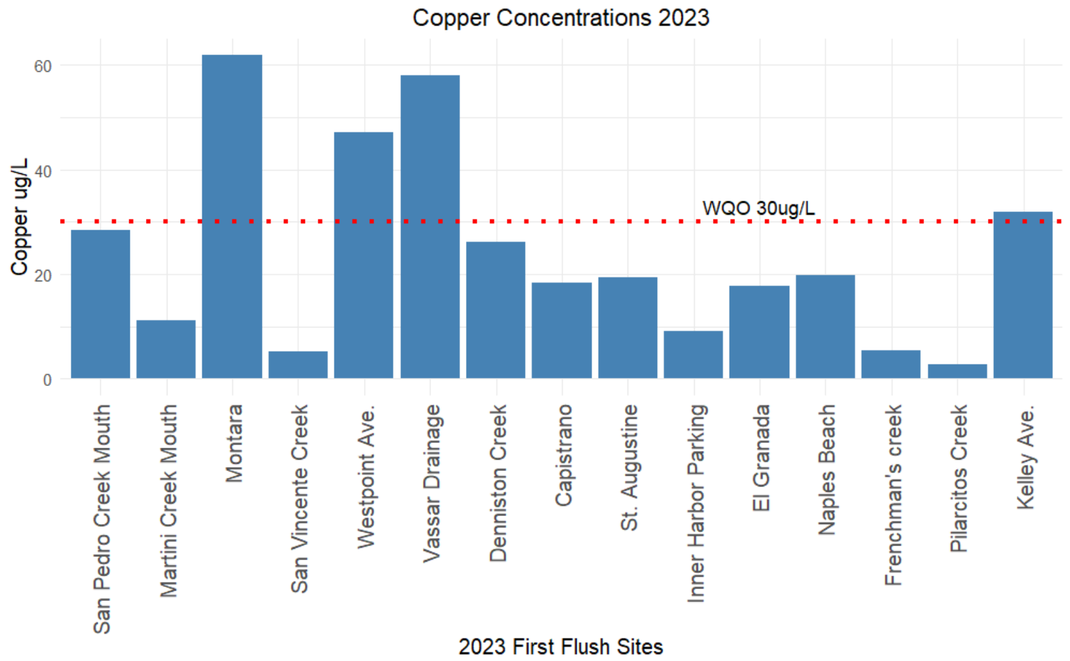
2024



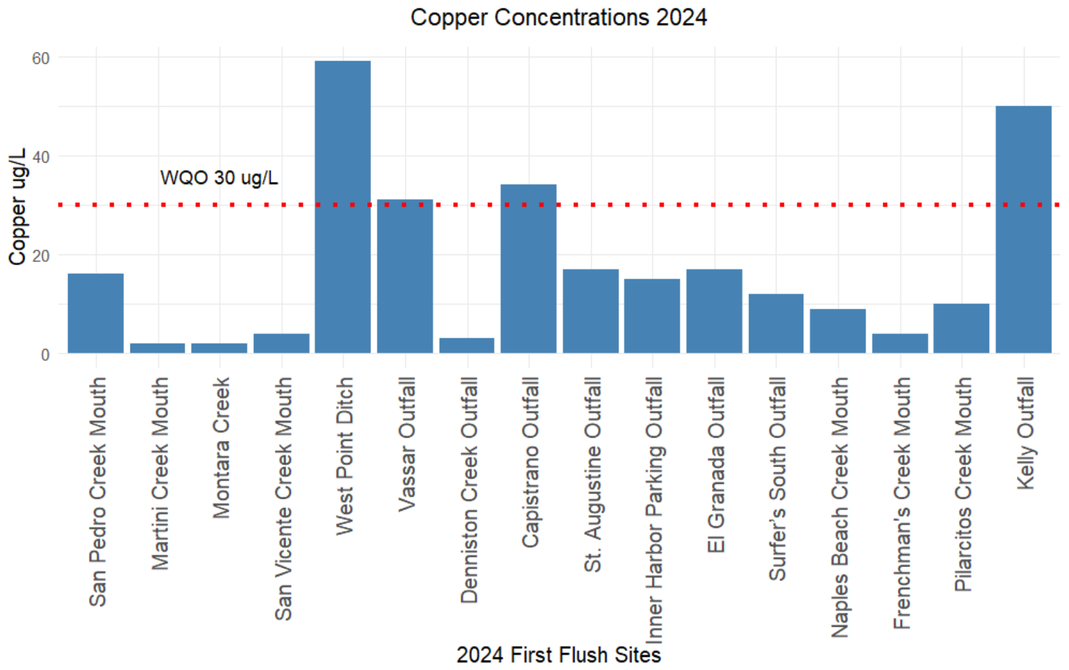
Pollutant	Potential Sources	Effects
Metals (copper, zinc, lead)	Gutters, roofs, brake pads, industrial waste, paint, fire	Human health impacts, reduced reproduction of marine mammals

Metals: Copper

2023

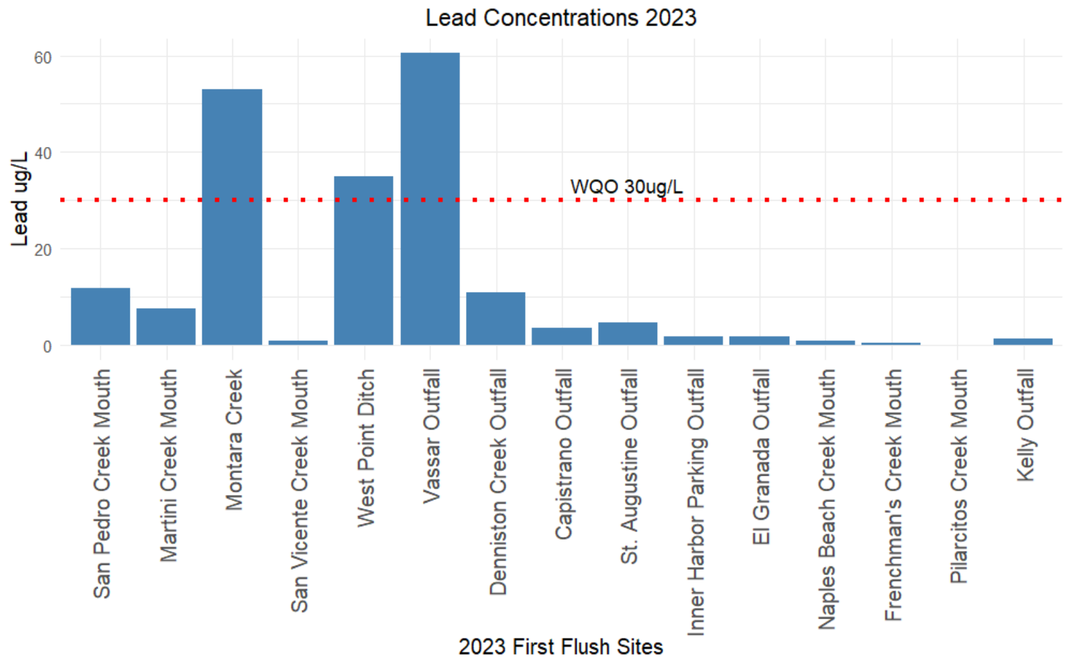


2024

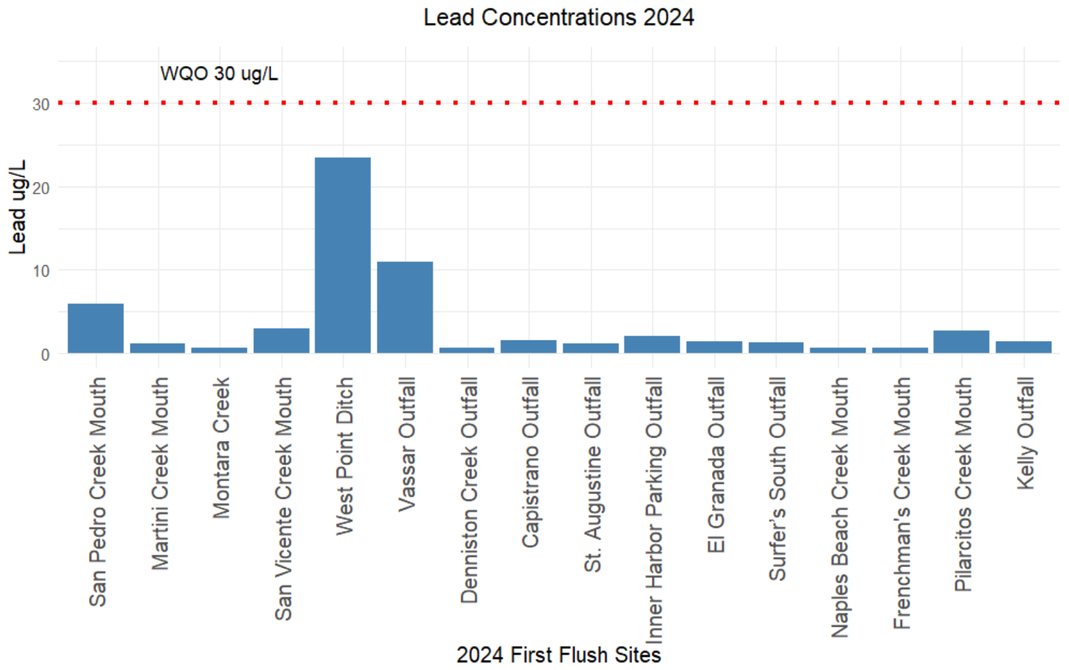


Metals: Lead

2023

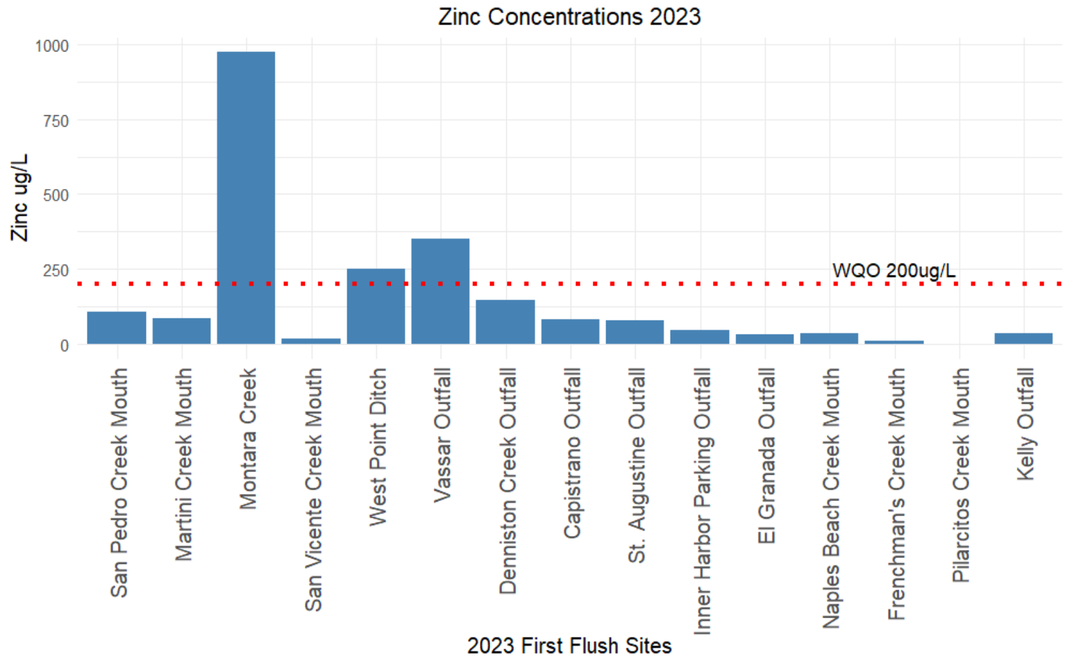


2024

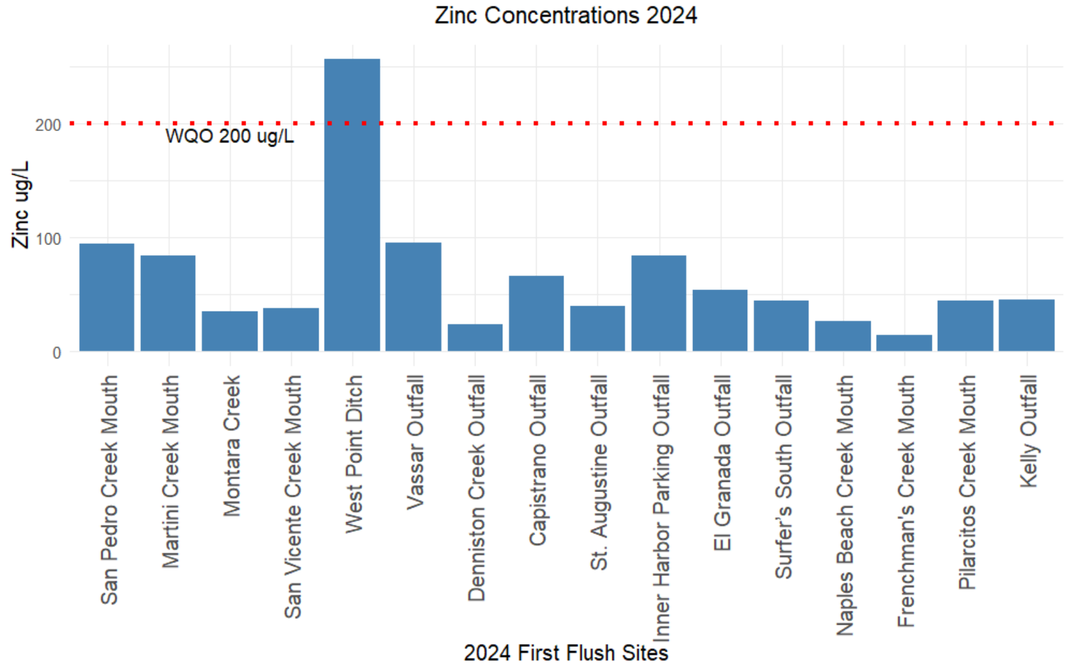


Metals: Zinc

2023



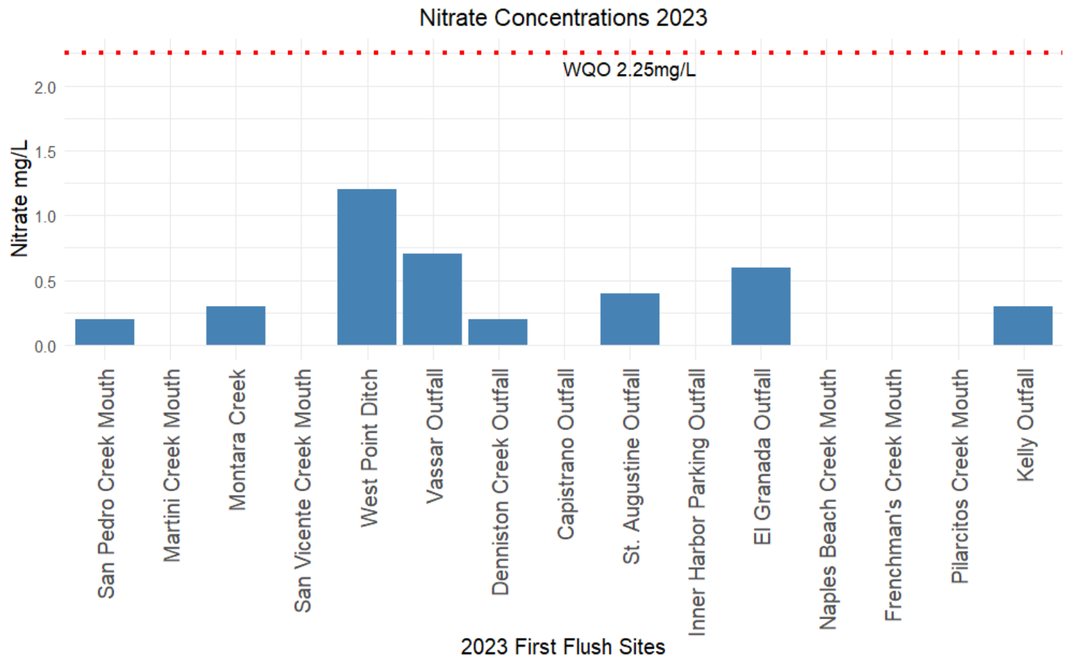
2024



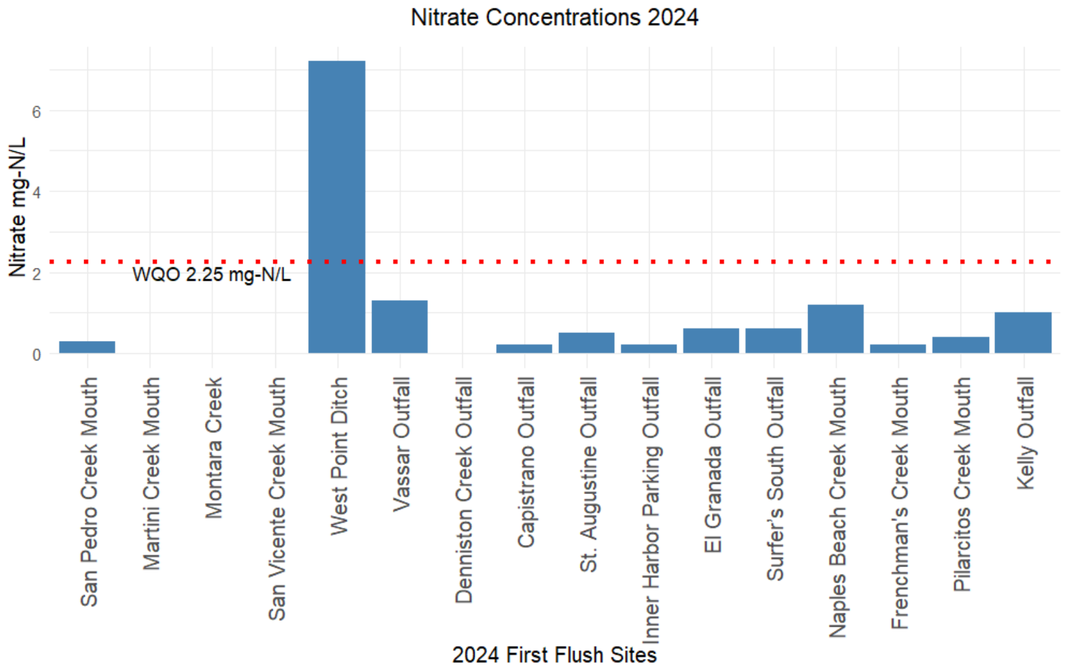
Pollutant	Potential Sources	Effects
Nutrients (nitrate and orthophosphate)	Fertilizers, pesticides, detergents	Algae blooms, Fish die-offs

Nutrients: Nitrate

2023

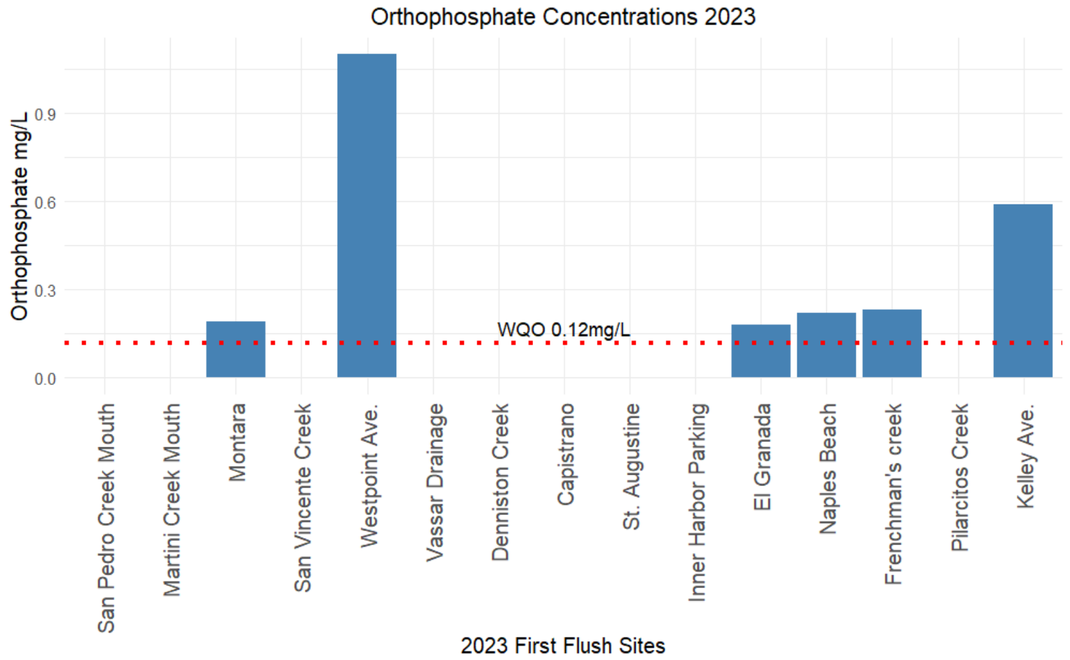


2024

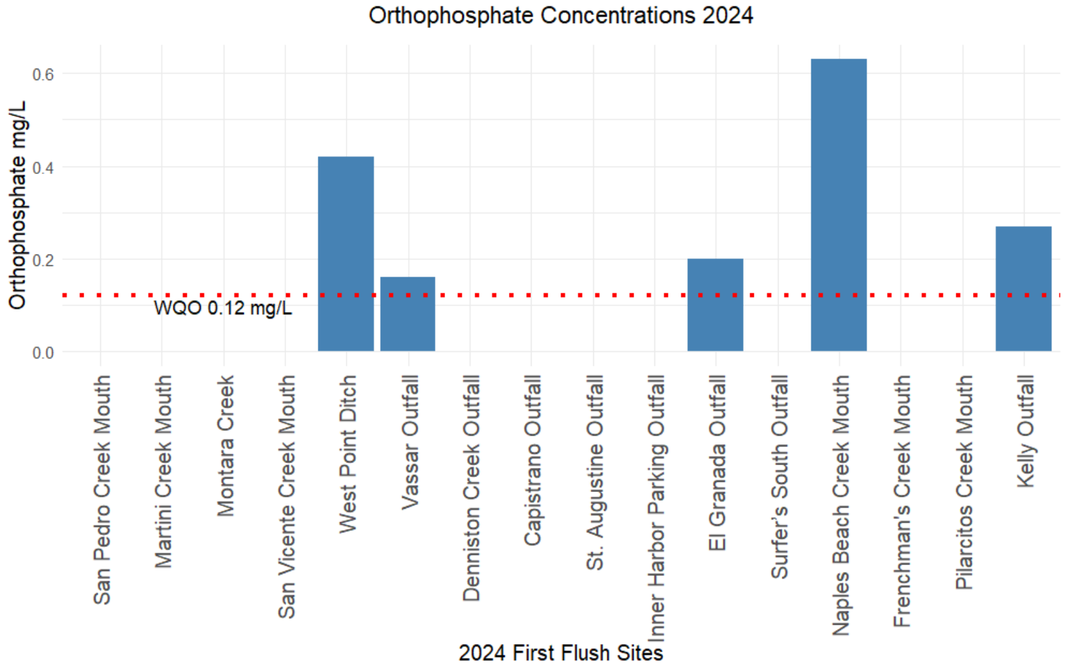


Nutrients: Orthophosphate

2023



2024



Findings

FIB: All sites above limit in 2023, all but two in 2024

TSS: One site above limit in 2023, correlated with metals and orthophosphate, none in 2024

Copper: Four sites above limit in 2023, four in 2024

Zinc: three sites above limit in 2023, one in 2024

Lead: Three sites above limit in 2023, none in 2024

Nitrate: Within recommended levels in 2023, one above limit in 2024

Orthophosphate: Six sites above limit in 2023, five in 2024.

West Point Ditch had high metals and orthophosphate in 2023 and numerous pollutants above limits in 2024.

Want to join the fun?

First Flush 2025 Signup

Fall 2025

Snapshot Day 2025 Signup

July 12, 2025

Thank you!
Questions?

Contact us:

Clifton Herrmann – RCD WQ Specialist

clifton@sanmateoRCD.org

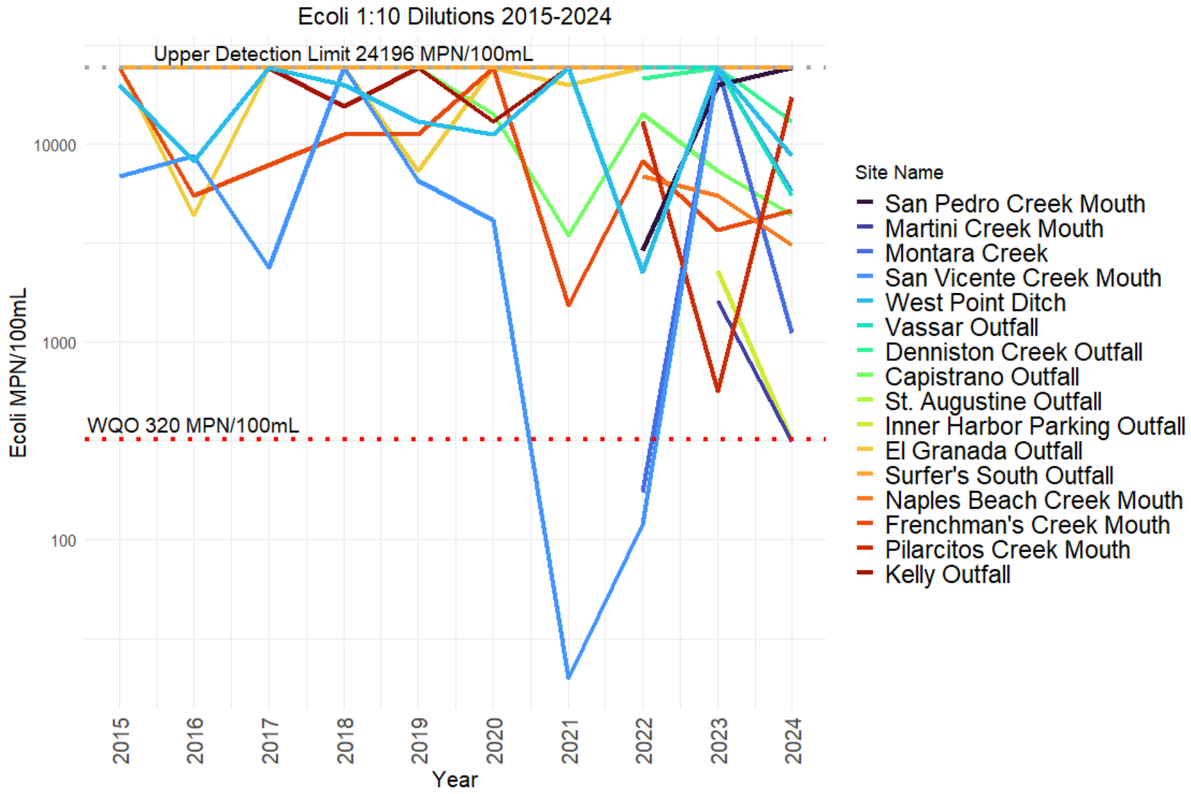
San Mateo RCD:

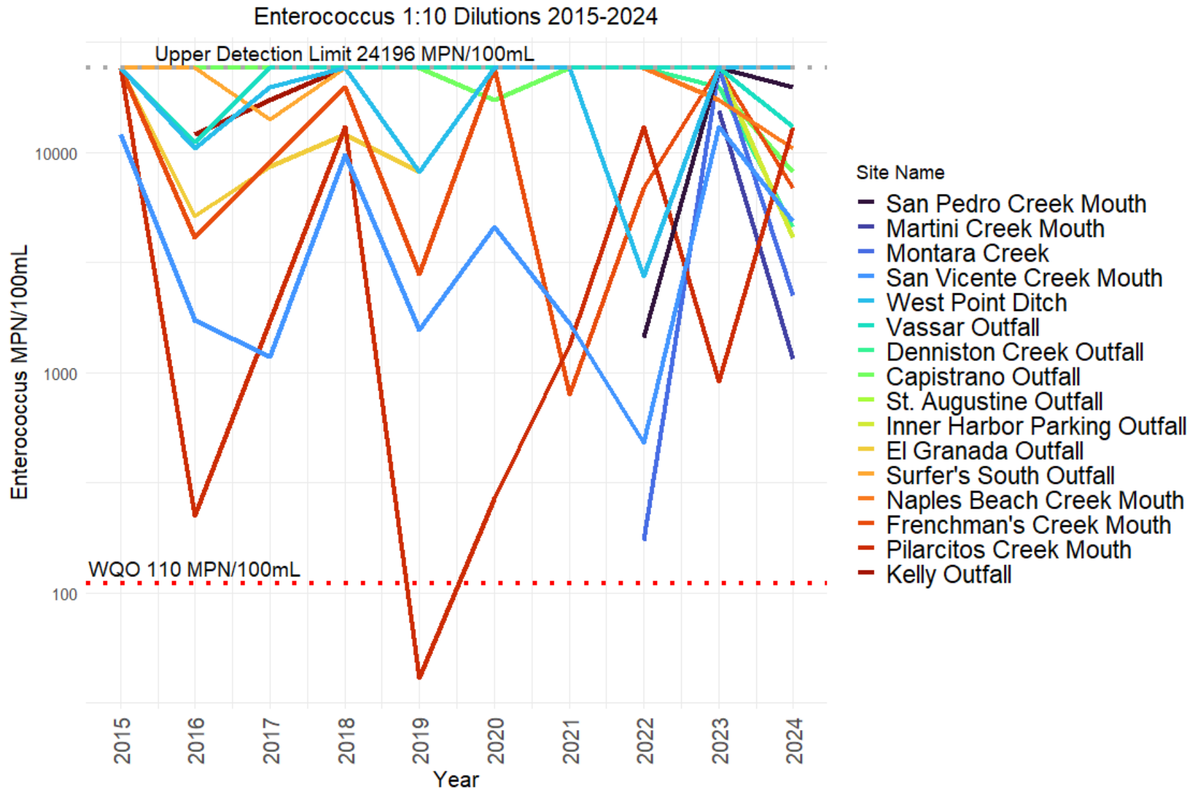
http://www.sanmateoRCD.org/

www.facebook/sanmateoRCD

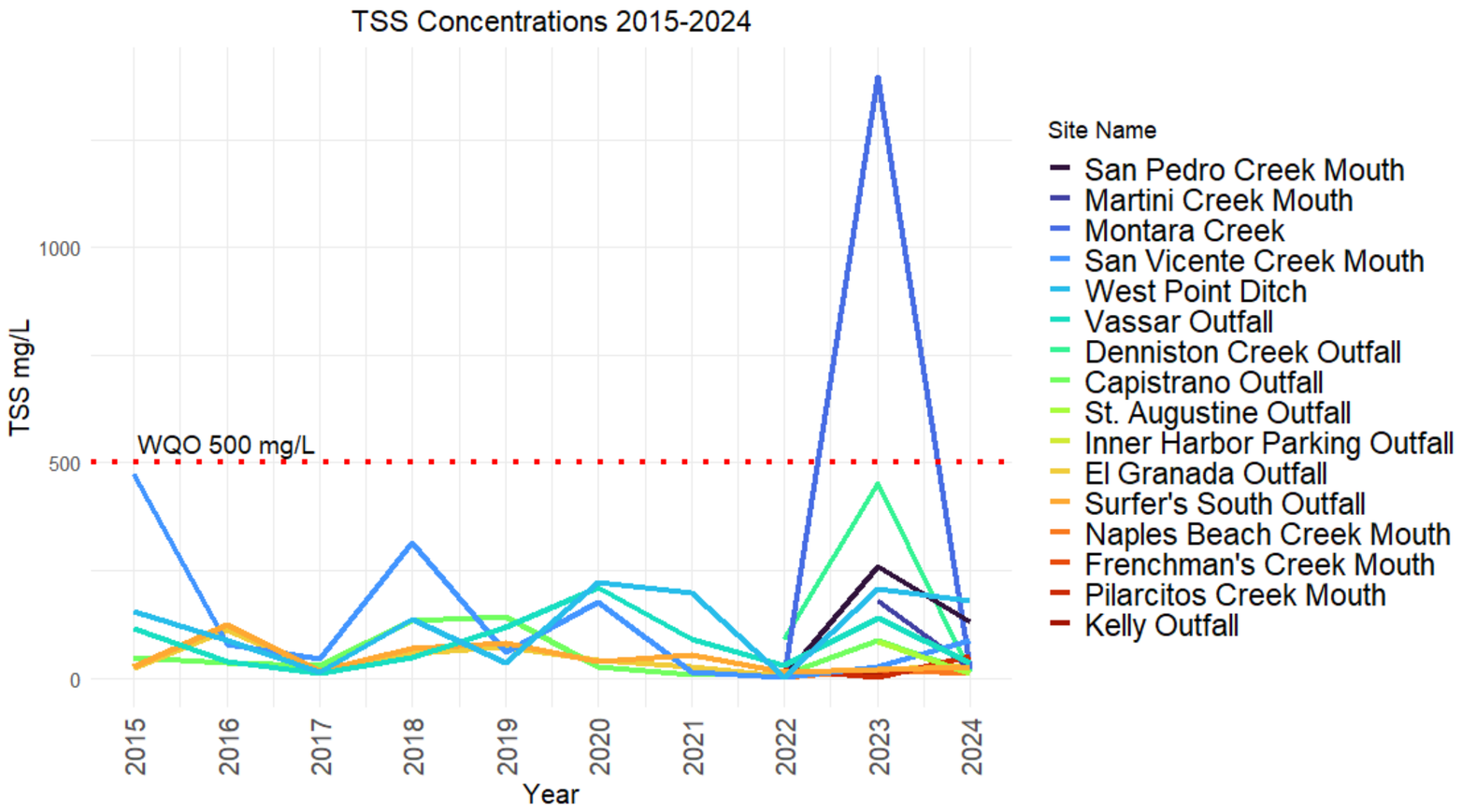
www.instagram.com/sanmateoRCD

Historical FIB Results

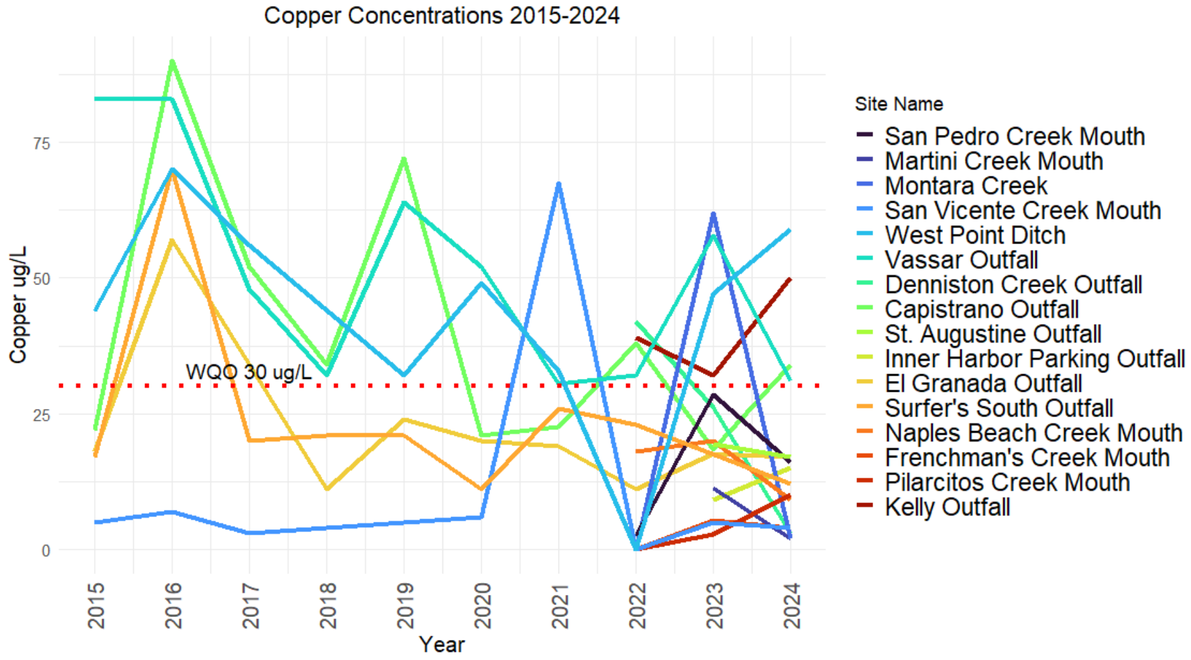


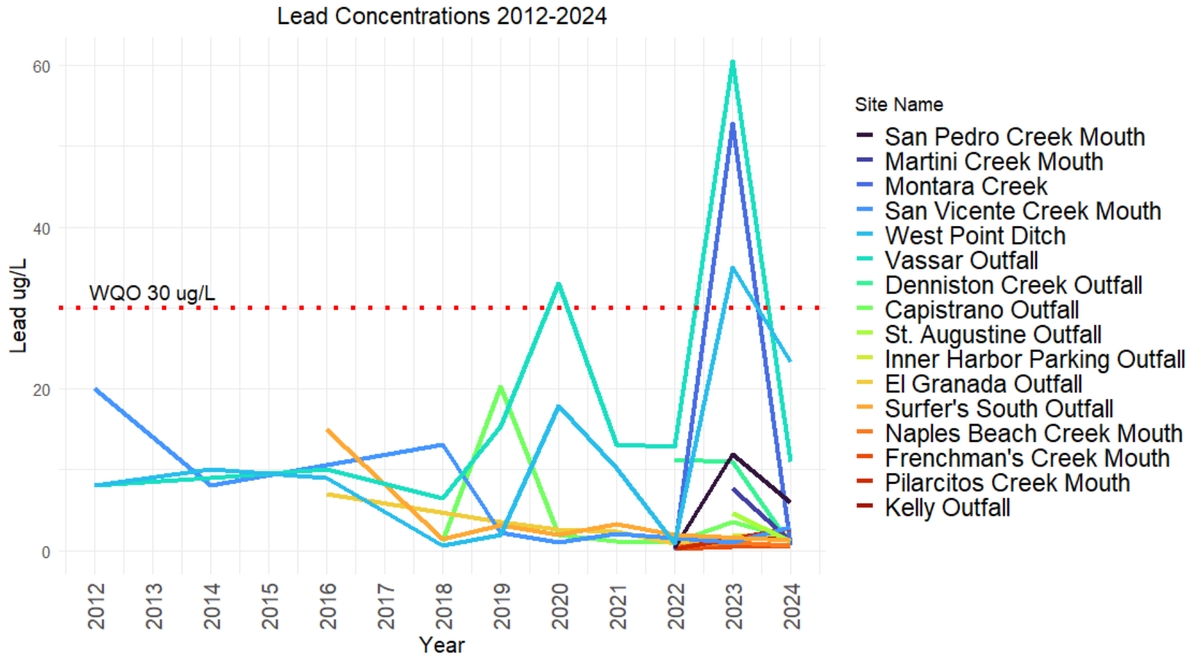


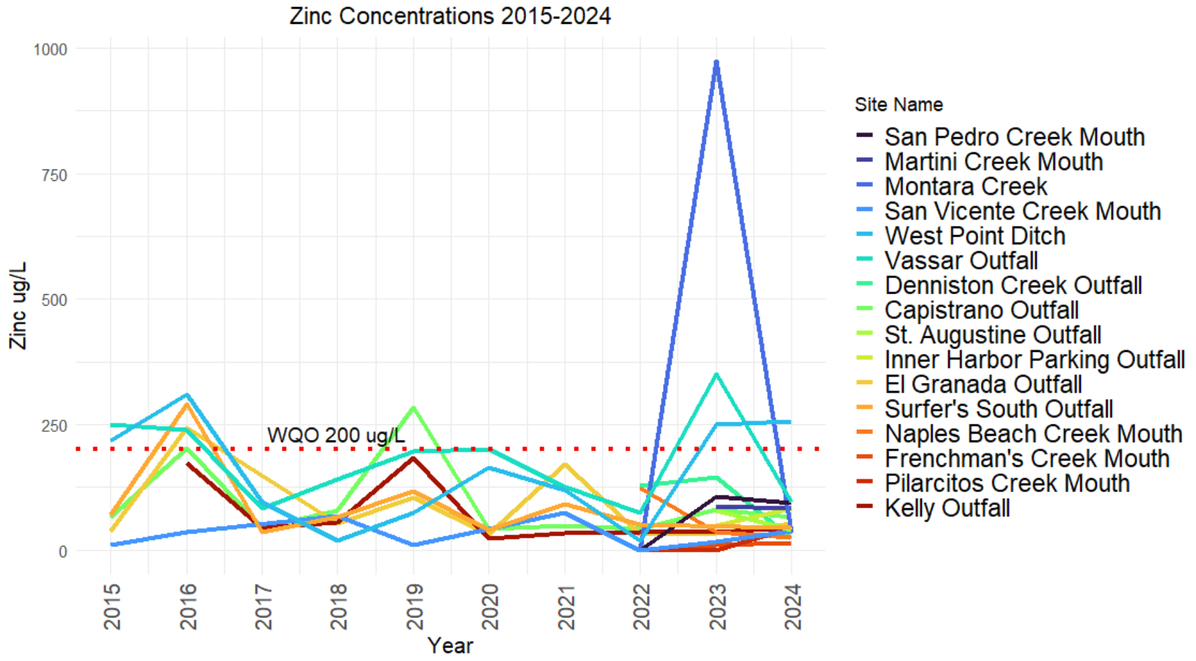
TSS: Historical Concentrations



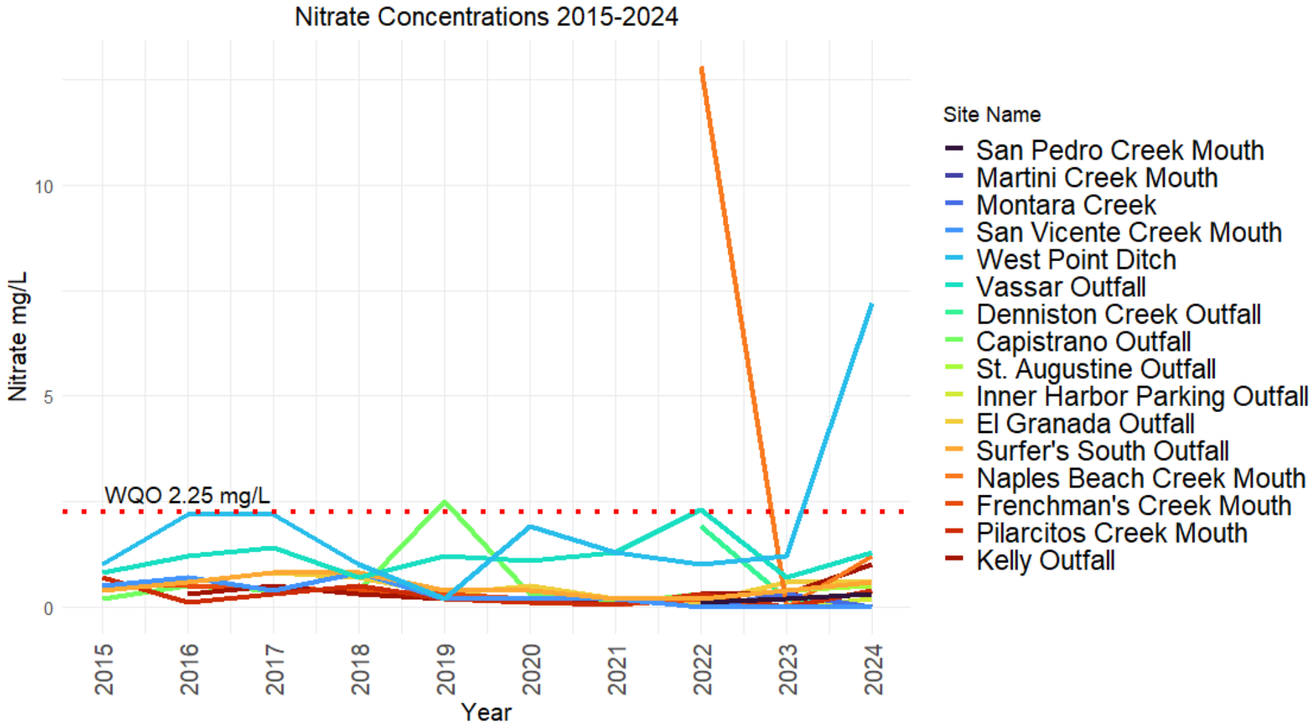
Metals: Historical Concentrations

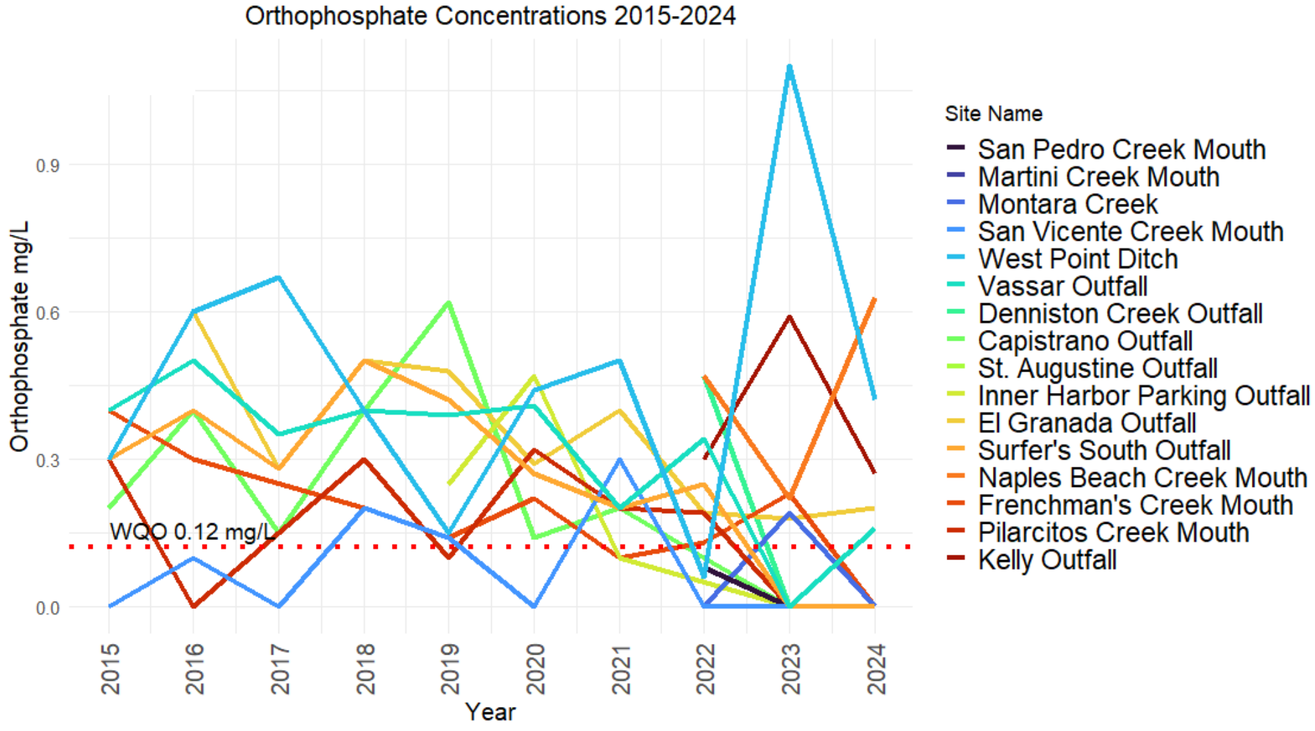






Nutrients: Historical Concentrations





When is First Flush?

2000 – October 10, 5:00 am
2001 – October 30, 4:00 am
2002 – November 7, 5:30 pm
2003 – October 31, 7:00 am
2004 – October 16, 11:30 pm
2005 – November 8, 4:30 am
2006 – November 3, 12:00 pm
2007 – September 22, 4:00 pm
2008 – November 1, 8:00 pm
2009 – October 13, 6:30 am
2010 – October 17, 12:30 pm
2011 – October 5, 2:00 am
2012 – October 22, 10:30 am
2013 – October 28, 9:00 am
2014 – October 25, 8:30 am
2015 – November 2, 7:00 am
2016 – October 14, 6:30 am
2017 – October 20, 2:00 am
2018 – November 21, 9:00am
2019 – November 19, 5:50pm
2020 – November 17, 1:00pm
2021 – October 20, 7:30pm
2022 – September 21, 9:25 am
2023 – November 15, 5:30pm
2024 – November 11, 11:00am