

## 2022 NSDCWMP Annual Progress Report (P. DeCino)



The purpose of this report is to summarize, briefly, all the work done over the last year, including recognizing the critical importance of our volunteer teams. Keep in mind ours is a monitoring program and as such we aren't tasked with necessarily explaining the origins of specific pollutants. Graphs of the different metrics will show all sampling sites. Individual watershed reports and be found elsewhere. Locations of the sites, and more information on the program can be found at:

[https://www.preservecalavera.org/?page\\_id=2403](https://www.preservecalavera.org/?page_id=2403)

During 2022, the Preserve Calavera North San Diego County Watershed Monitoring Program sampled 9 sites in our 3 sub-watersheds (San Marcos/Batiquitos, Agua Hedionda and Buena Vista Creek) for all metrics (see below) and one site within the Quarry Creek/The Preserves development for bacteria bi-monthly.

New this year was the sampling for environmental DNA (eDNA) to measure the presence of fish, benthic macroinvertebrates and phytoplankton, part of a California State Program ([SWAMP eDNA Metabarcoding Monitoring and Analysis Project](#) or SeMMAP).

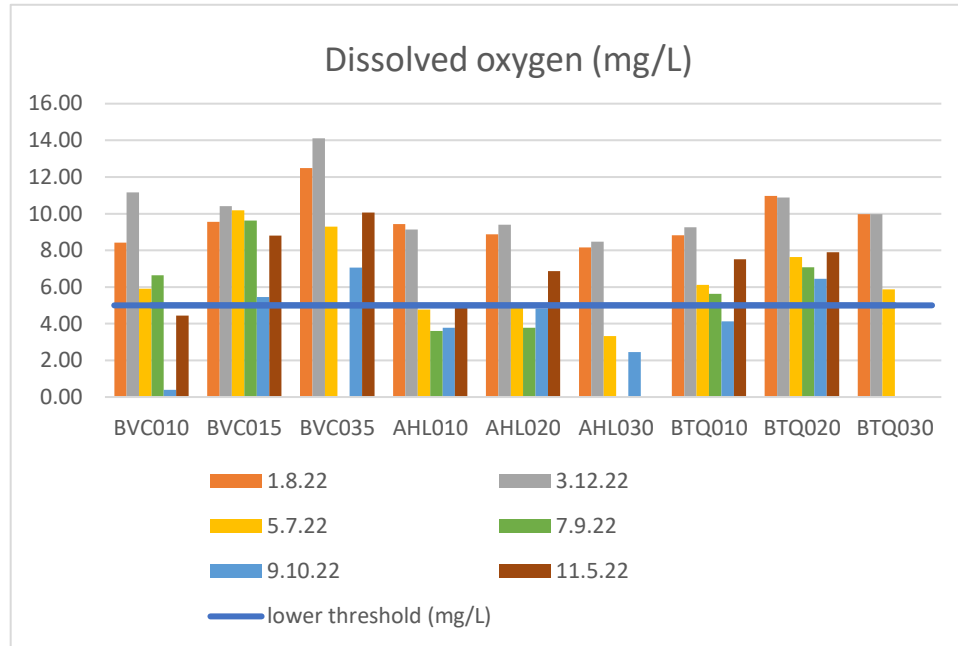
We've also recruited a volunteer, a data analyst (F. Gram) to help create a data template to facilitate the transfer of our data to the California Data Exchange Network or CEDEN. This is still a work in progress but will mean our data will be available in a more timely fashion than in the past. Please note that in July, 2022, site BVC035 was not accessible and, therefore, we had no data and BTQ030 was dry for the last 3 sessions of the year.

We finally completed the last draft of our Quality Assurance Project Plan and it is ready to share with interested parties.

## FIELD DATA

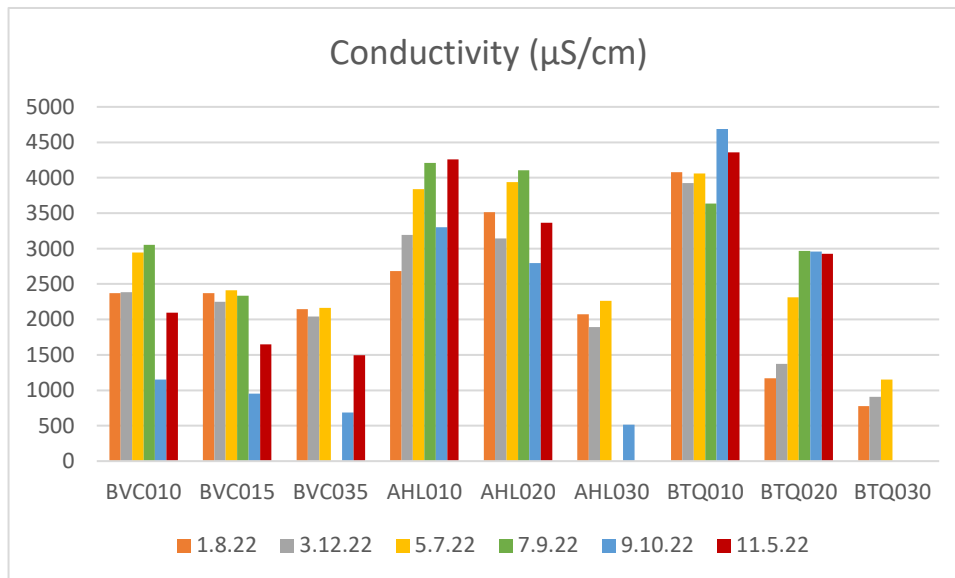
### Dissolved Oxygen (threshold = 5.0 mg/L)

In general, the dissolved oxygen was above the lower threshold of 5.0 mg/L for most sites with a few exceptions.



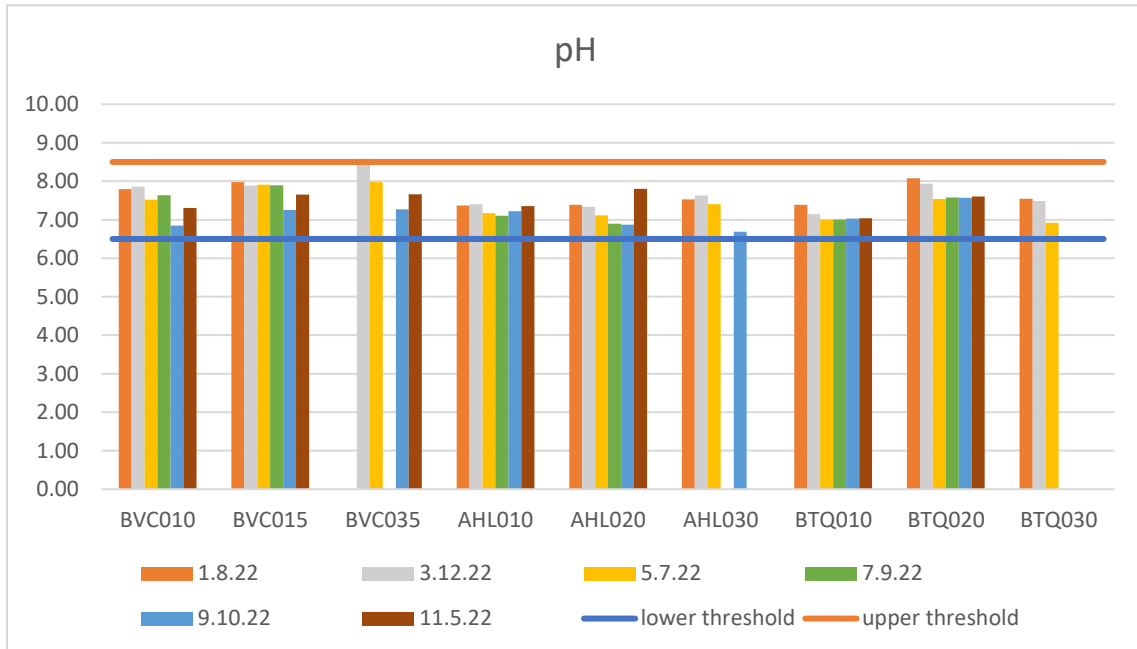
### Conductivity (no threshold)

There is no threshold for conductivity and all measurements were within historic ranges.



**pH (threshold 6.5-8.5)**

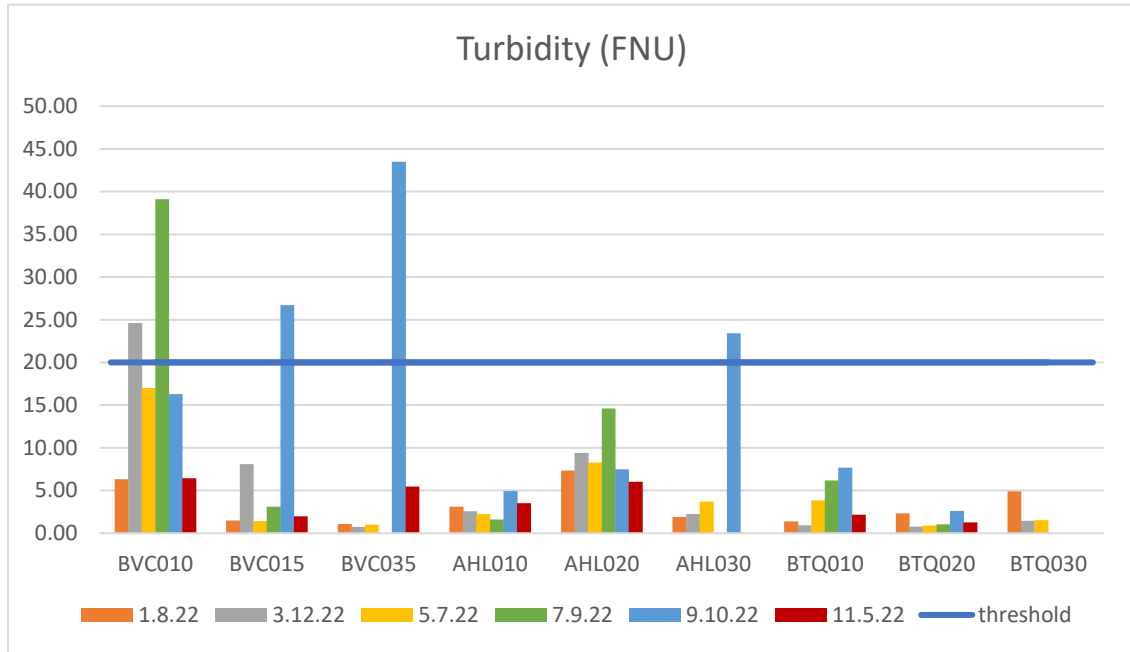
Happily, all sites throughout the year were within the acceptable range.



## LABORATORY DATA

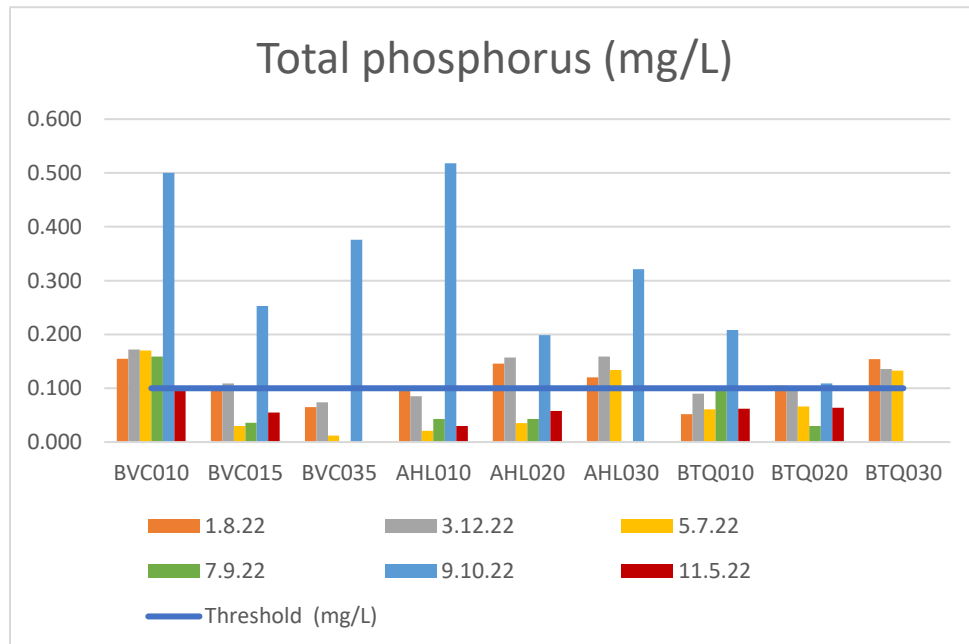
### Turbidity (threshold is 20.0 FNU)

Only on a few occasions was turbidity, a measure of cloudiness, above threshold and not much of a concern. The September sampling occurred shortly after a rain event which may account for the spikes in turbidity. Site BVC010 is at the head of the Buena Vista Lagoon and is typically somewhat cloudy.



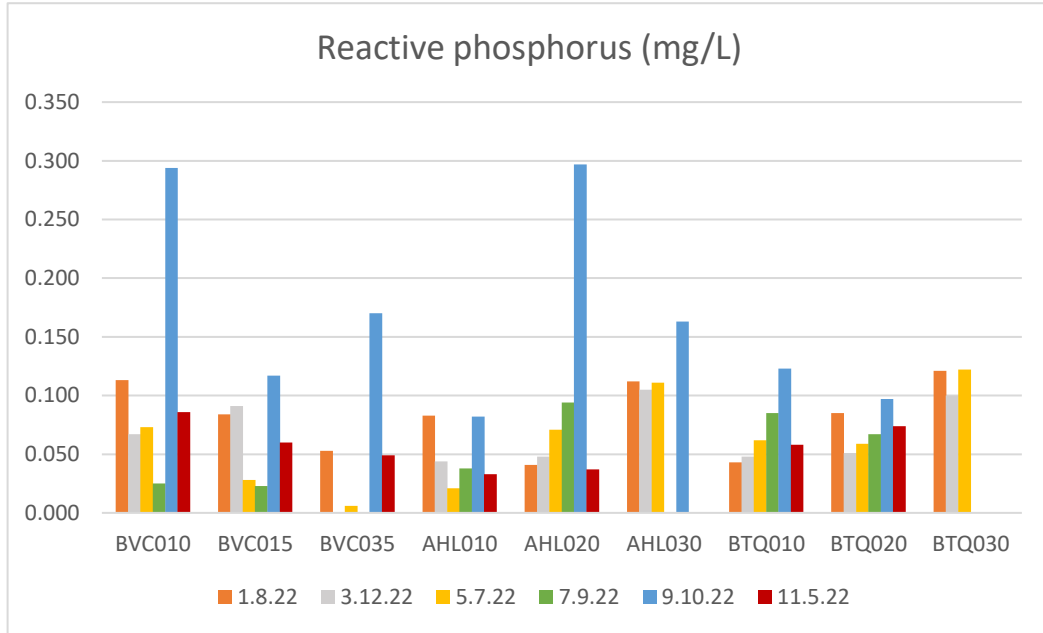
### Total Phosphorus (threshold = 0.1 mg/L)

Aside from the spikes in September after the rain event, total phosphorus is, generally, fairly stable at a particular site.



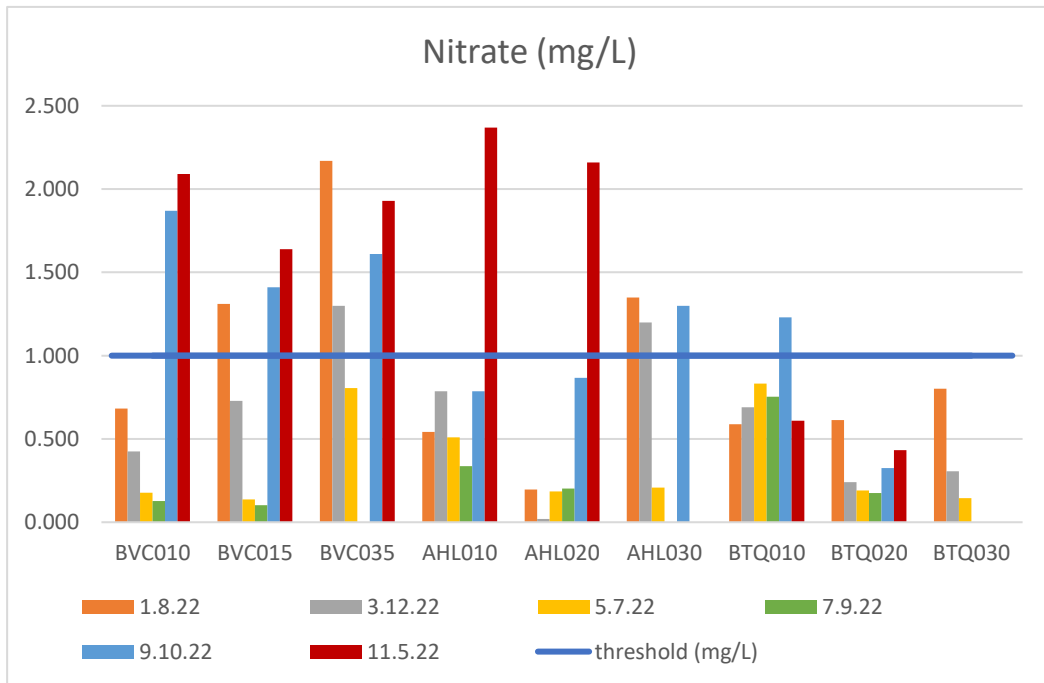
Reactive Phosphorus (no threshold)

As with total phosphorus, there was a spike at many sites in after the rain event in September.



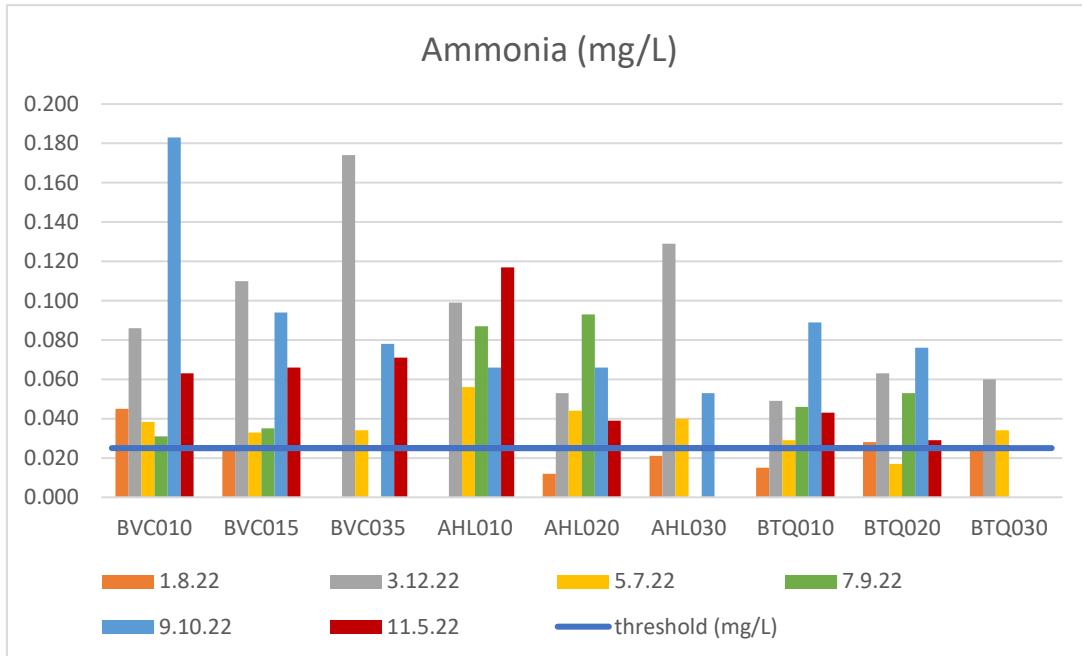
Nitrate (threshold = 1.0 mg/L)

It's not uncommon for nitrates to be high in our watersheds. Again, we see spikes in September but also in November which also was within 3 days of a rain event.



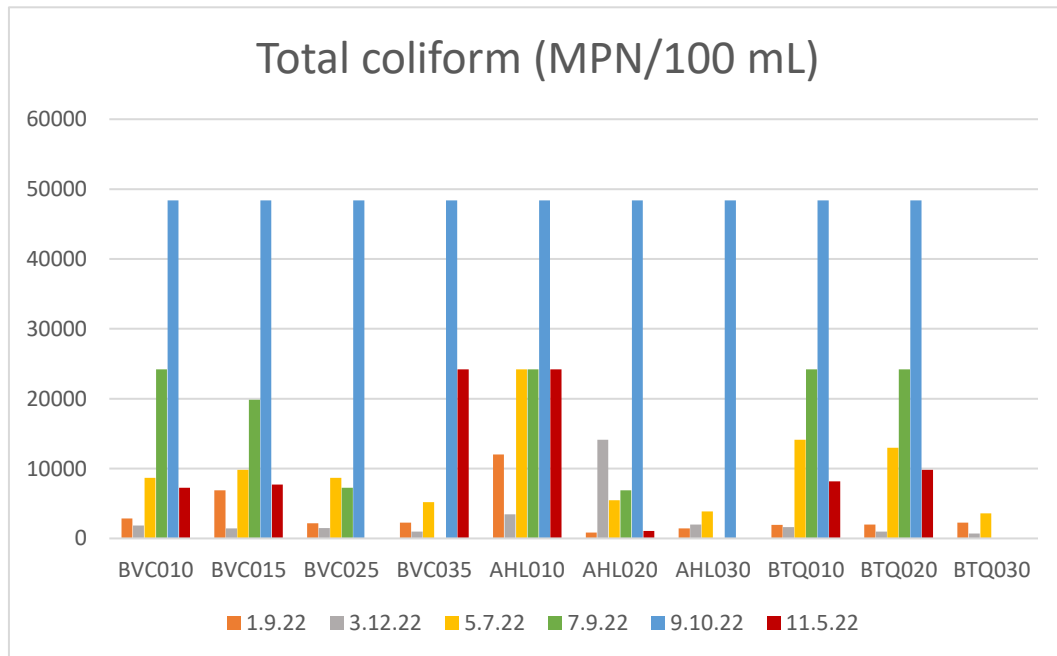
**Ammonia (threshold = 0.025 mg/L)**

This nutrient is typically high at most of our sites regardless of recent rains.



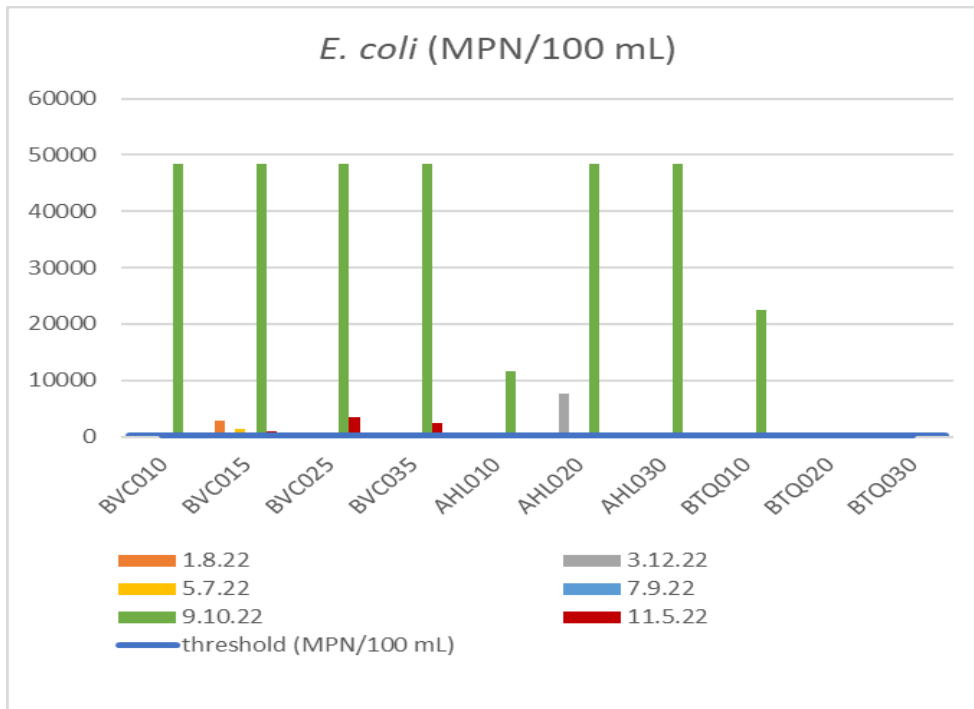
**Total coliform (no threshold)**

Given the multiple non-pathogenic sources of coliform bacteria, it has no threshold and is of little concern. The September bars reflect out-of-range measurements for our assay. That was the 'first flush' or first significant rains of the season.

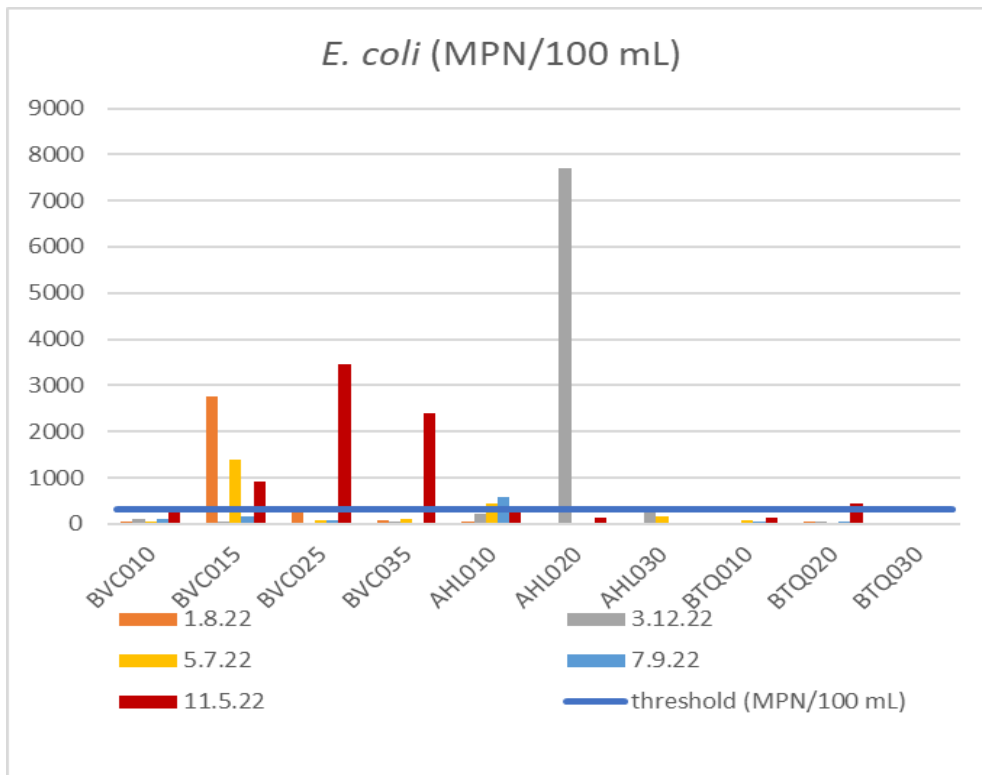


E. coli (threshold 320 MPN/100 mL)

We're presenting 2 graphs here due to the extremely high *E. coli* measurements during September's first flush. You can see that most sites were off-scale.



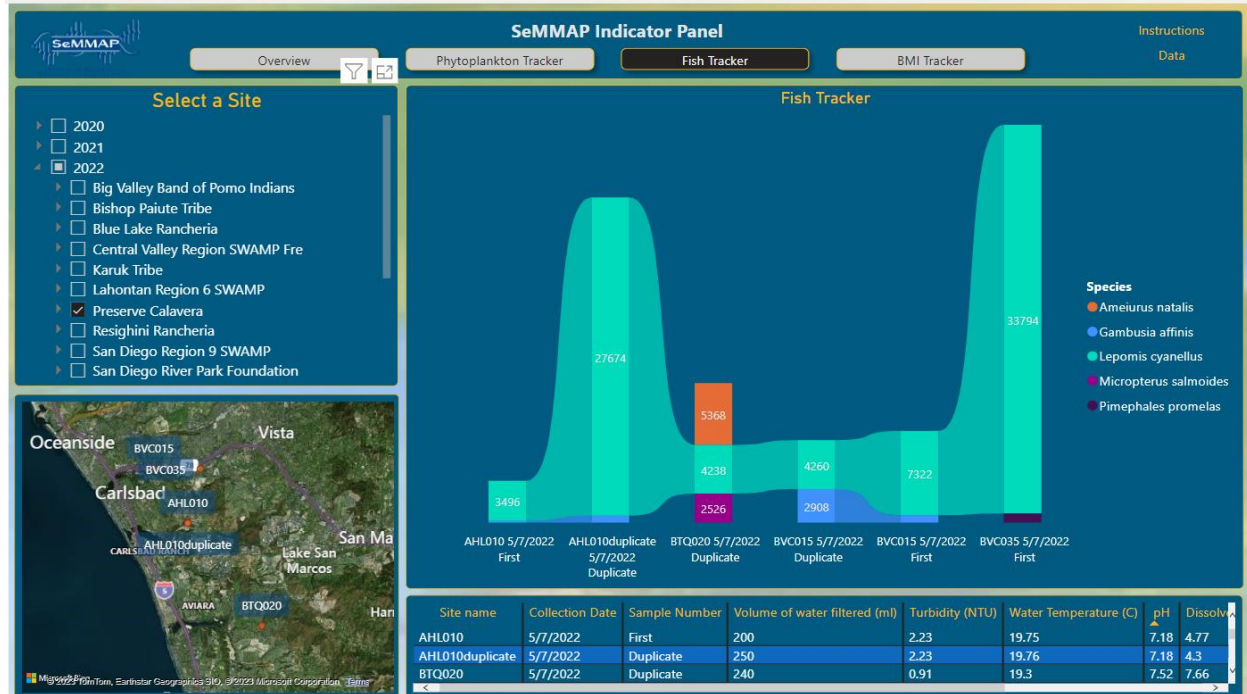
When the September data is eliminated from the graph, other anomalies become more apparent.



## eDNA results

One or two samples per sub-watershed was collected in May of 2022 by filtering 50 mL of water through a filter and sending those filters to Jonah Labs in Colorado for processing.

Of particular interest for the species searched were the fish of which the ones noted were all non-native.



Key: *Ameiurus natalis*-yellow bullhead; *Gambusia affinis*-mosquitofish; *Lepomis cyanellus*-green sunfish; *Micropterus salmoides*-large mouth bass; *Pimephales promelas*-fathead minnow.

## VOLUNTEERS

The NSDCWMP is totally run by volunteers. Our volunteers help stock field kits, calibrate and verify calibrations of our field equipment, collect water samples, make field measurements, carry out laboratory tests for bacteria, turbidity and nutrients, and review data over the course of our 4 day window of setup, sampling and analysis.

In 2022 175 volunteers contributed more than 370 hours doing this work. In addition, smaller teams helped write up annual sub-watershed reports and review our Quality Assurance Project Plan. Two volunteers also staffed a table at the annual Endangered Species Day we co-host with Buena Vista Audubon Society sharing our program and results with the public. Data is posted on our [website](#) and we are gearing up to post 2019-2022 data on CEDEN.