Save Barnegat Bay Water Quality Project

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NJ Watershed Ambassador

Importance of water quality in coastal lagoons

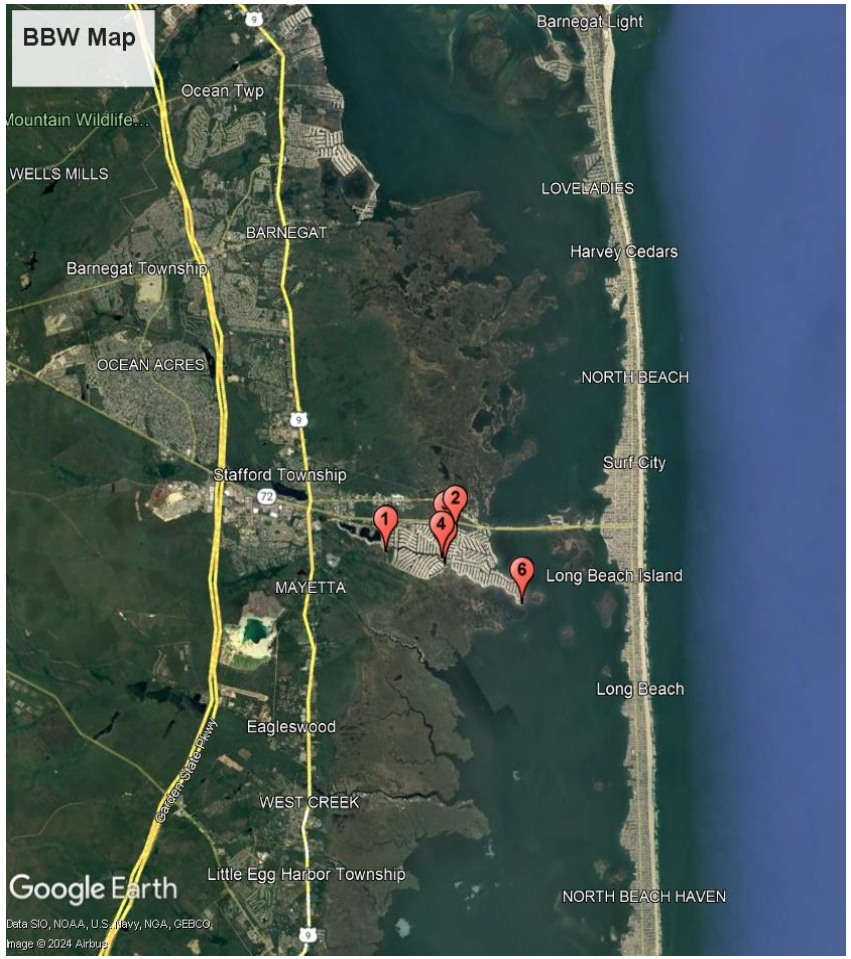
- Home to a large diversity of species
- Lagoons attract human activity
  - Boats
  - Herbicides
  - Construction
- Lack of flow
- This could impact water quality thus impacting humans
  - Decline of food, swimming, and jobs

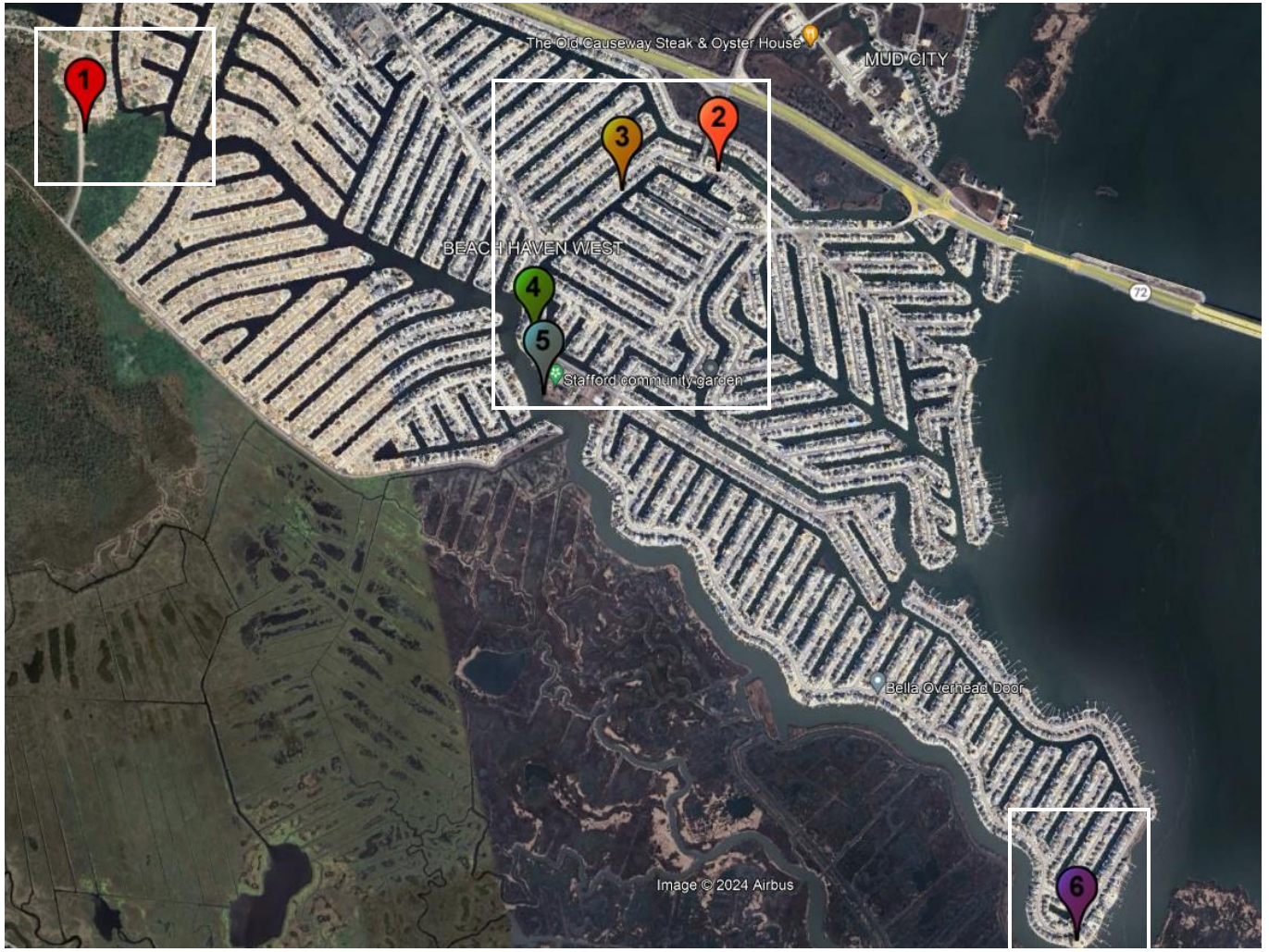
Recent news on July 30th - Massive fish kill in Little Egg Harbor Lagoon

Our Project

- Goal: Test 6 strategic sites in Beach Haven West to evaluate the water quality in this area
- Goal Pt 2: To evaluate the effects of the new sewer system at two of the sites (Sites 3 & 4)

The study sites





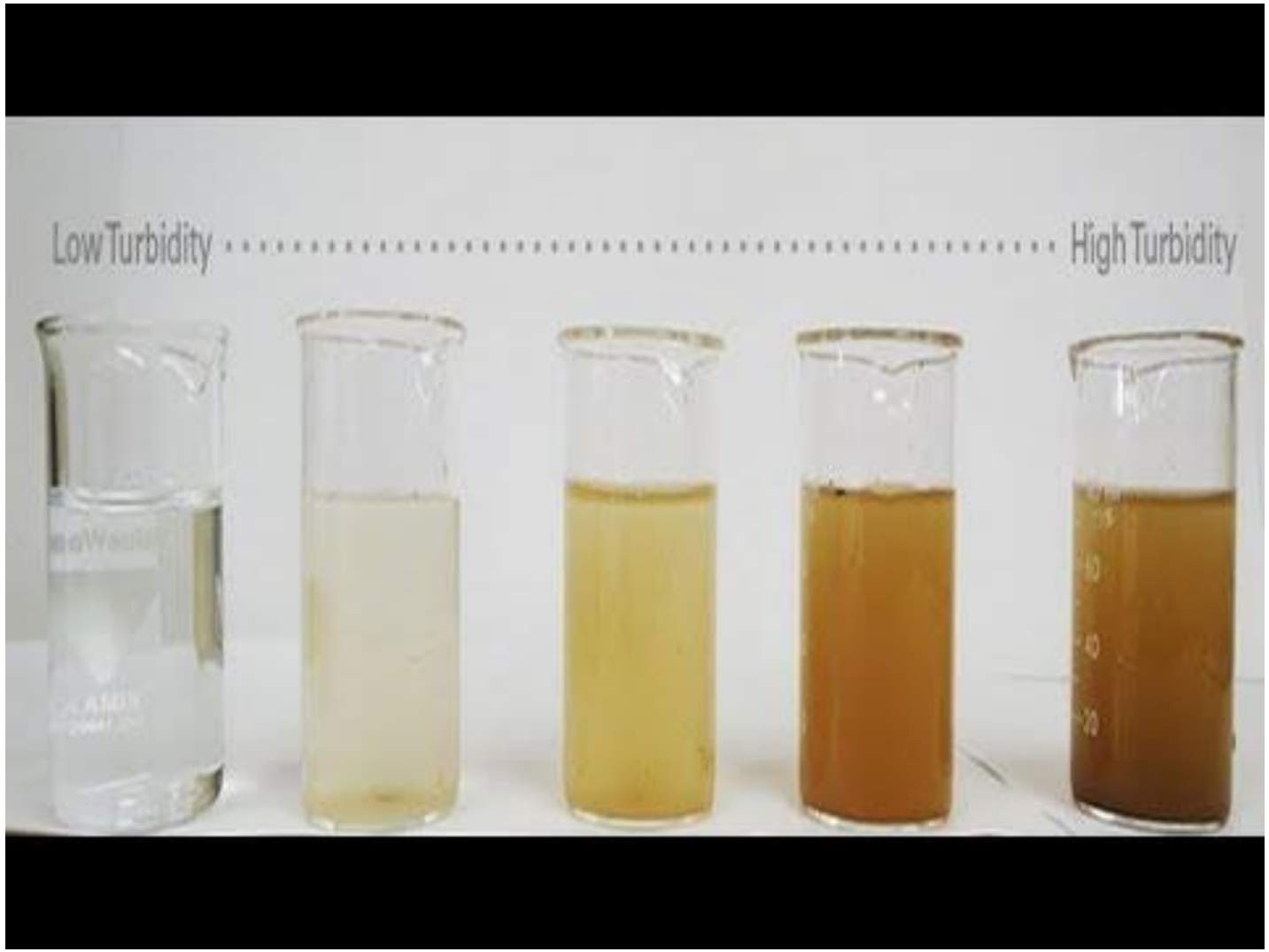
Methods in the Field

YSI ProPlus and collecting sample bottles and Whirlpack bags

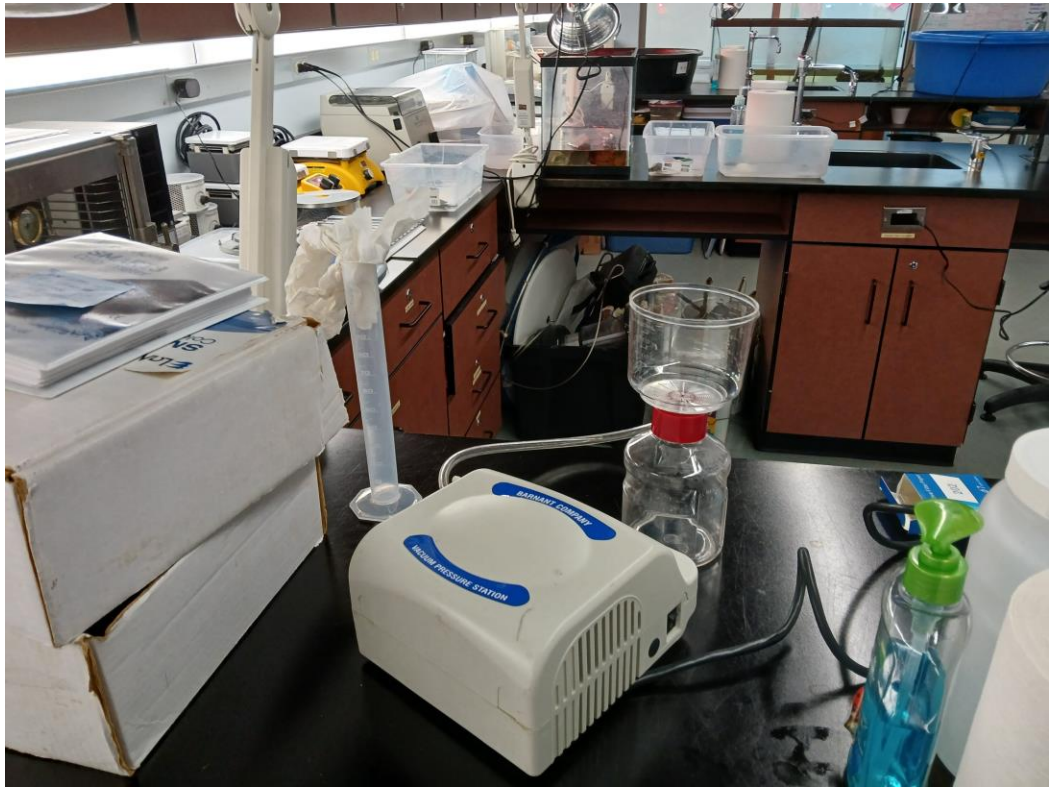
Methods in the Lab

- Aquafluor handheld fluorometer (chlorophyll - RFU), Aquafluor turbidity meter (NTU), and pH testing

Turbidity

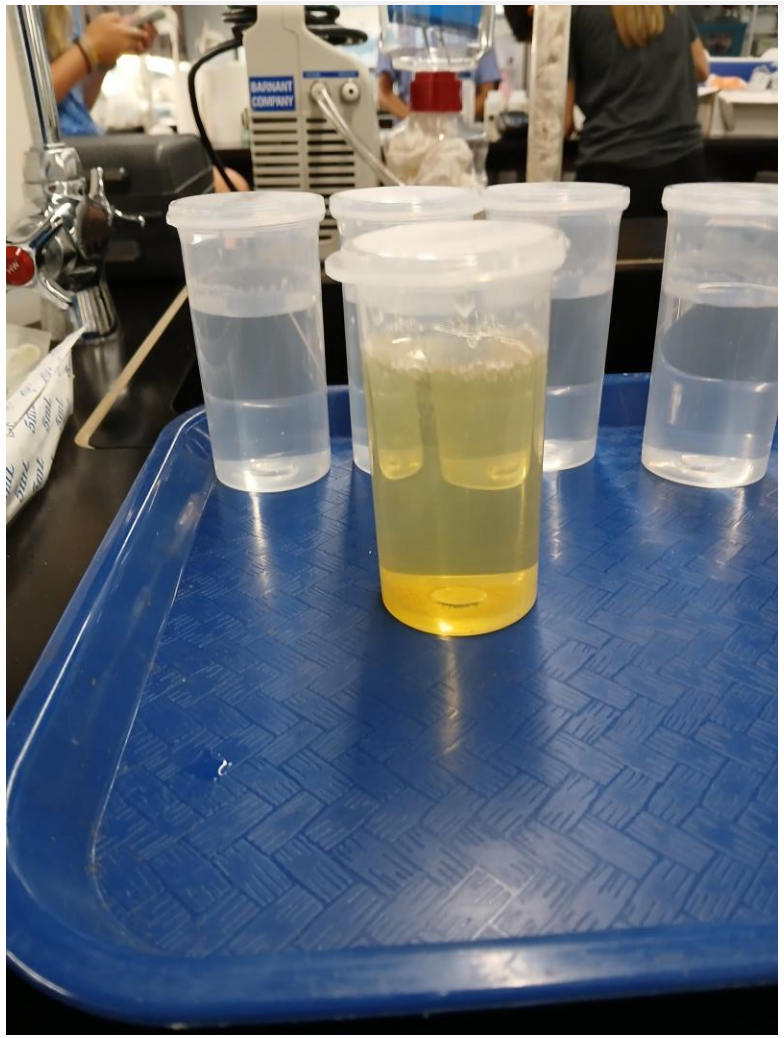


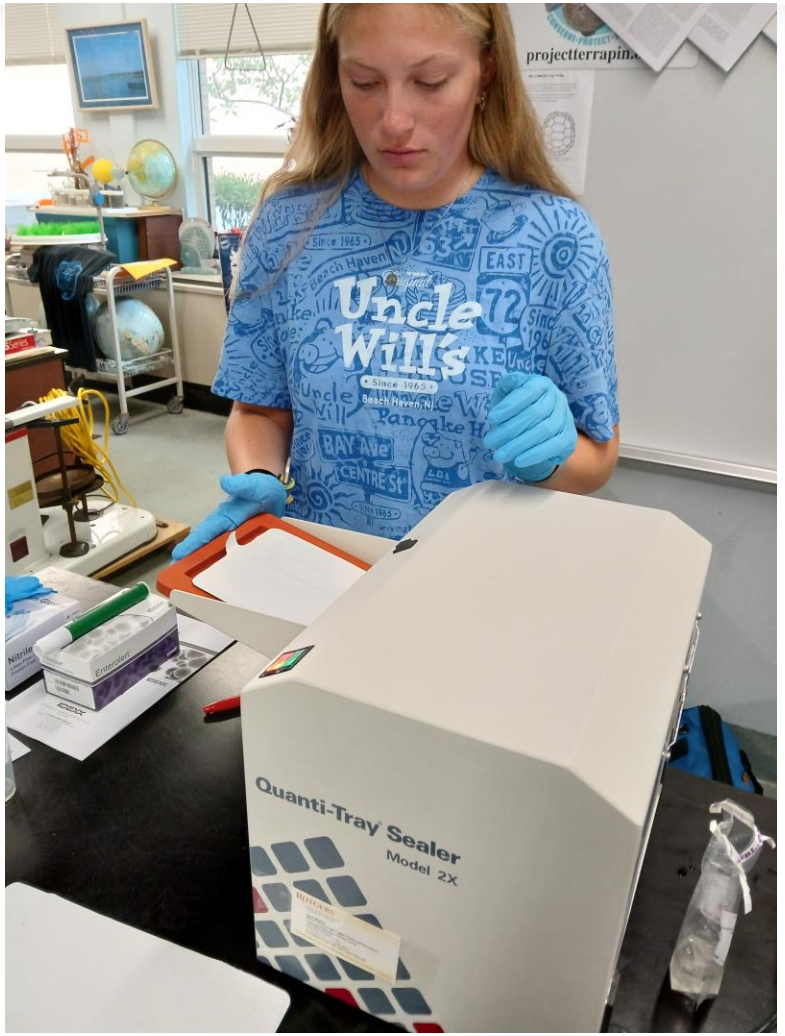
Nitrates (ppm) and Suspended Solids (mg/L)



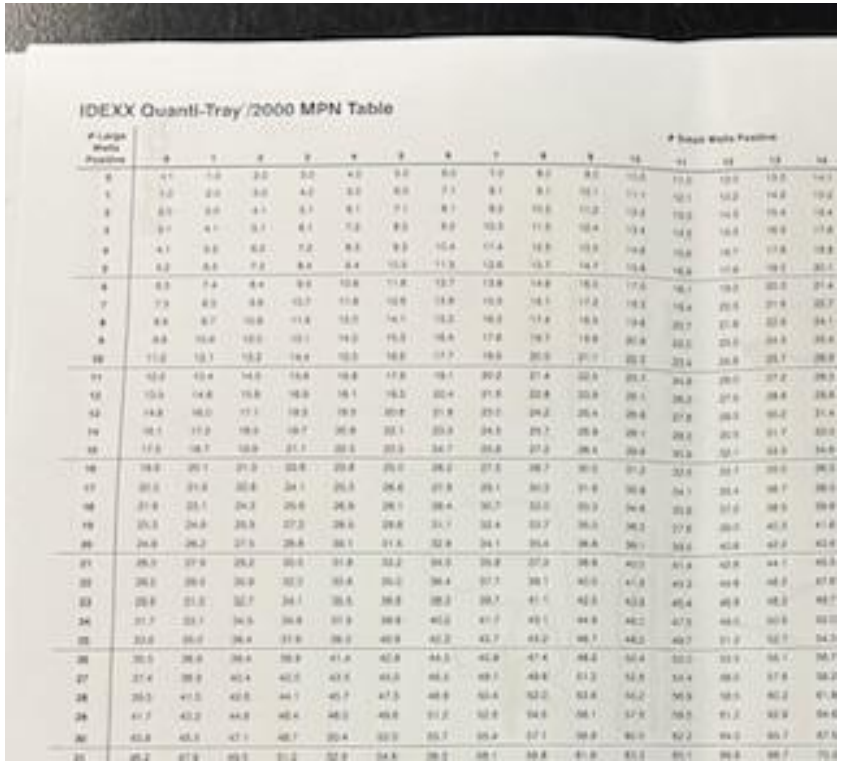
- Nitrates: Two nitrate tablets were crushed up into each sample then dissolved for 5 minutes before being placed into the tester (Zinc reduction).
- Not as accurate as other methods (Cadmium reduction).
- Suspended solids: The filter paper was weighed then 100mL of the sample was poured over the paper through a vacuum. The filter paper was dried and weighed again.

Bacteria testing (Enterolert - IDEXX Method (US EPA 40 CFR Part 141, drinking water)





Bacteria testing data

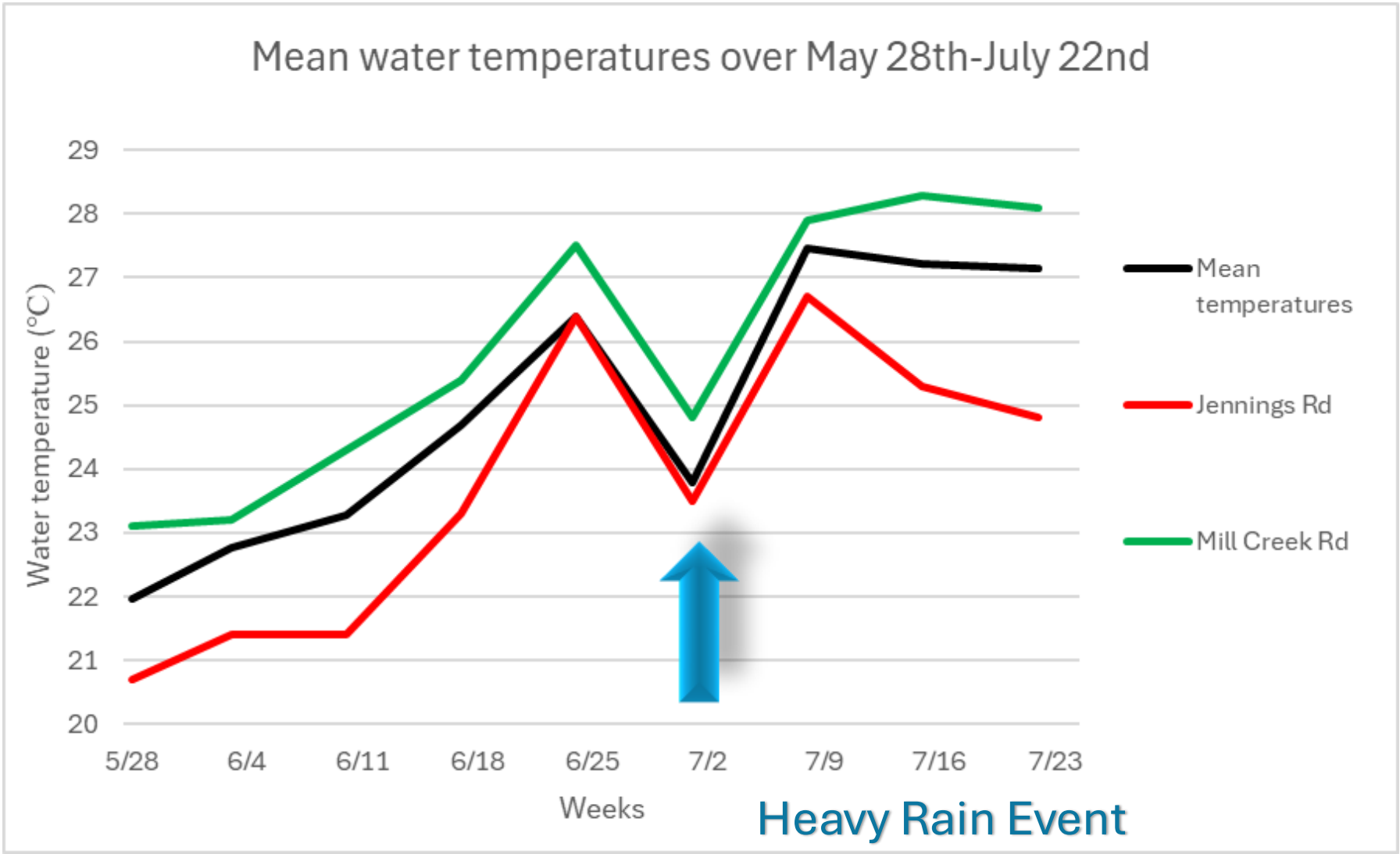


IDEXX Quanti-Tray /2000 MPN Table

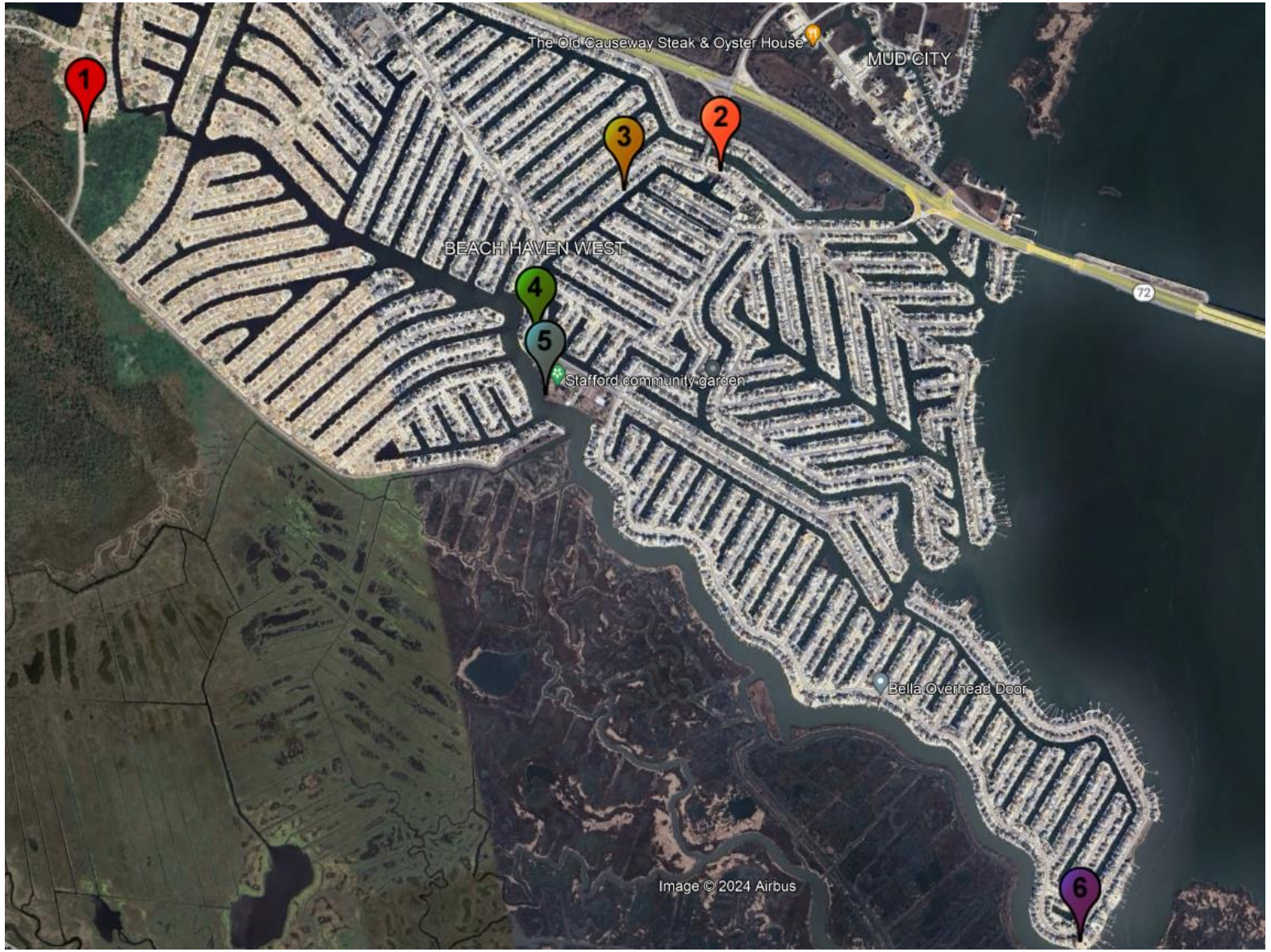
Results

Temperature, Turbidity, Suspended Solids, Nitrates, Chlorophyll, Specific Conductivity (Salinity) and Bacteria

Temperature (Celsius)

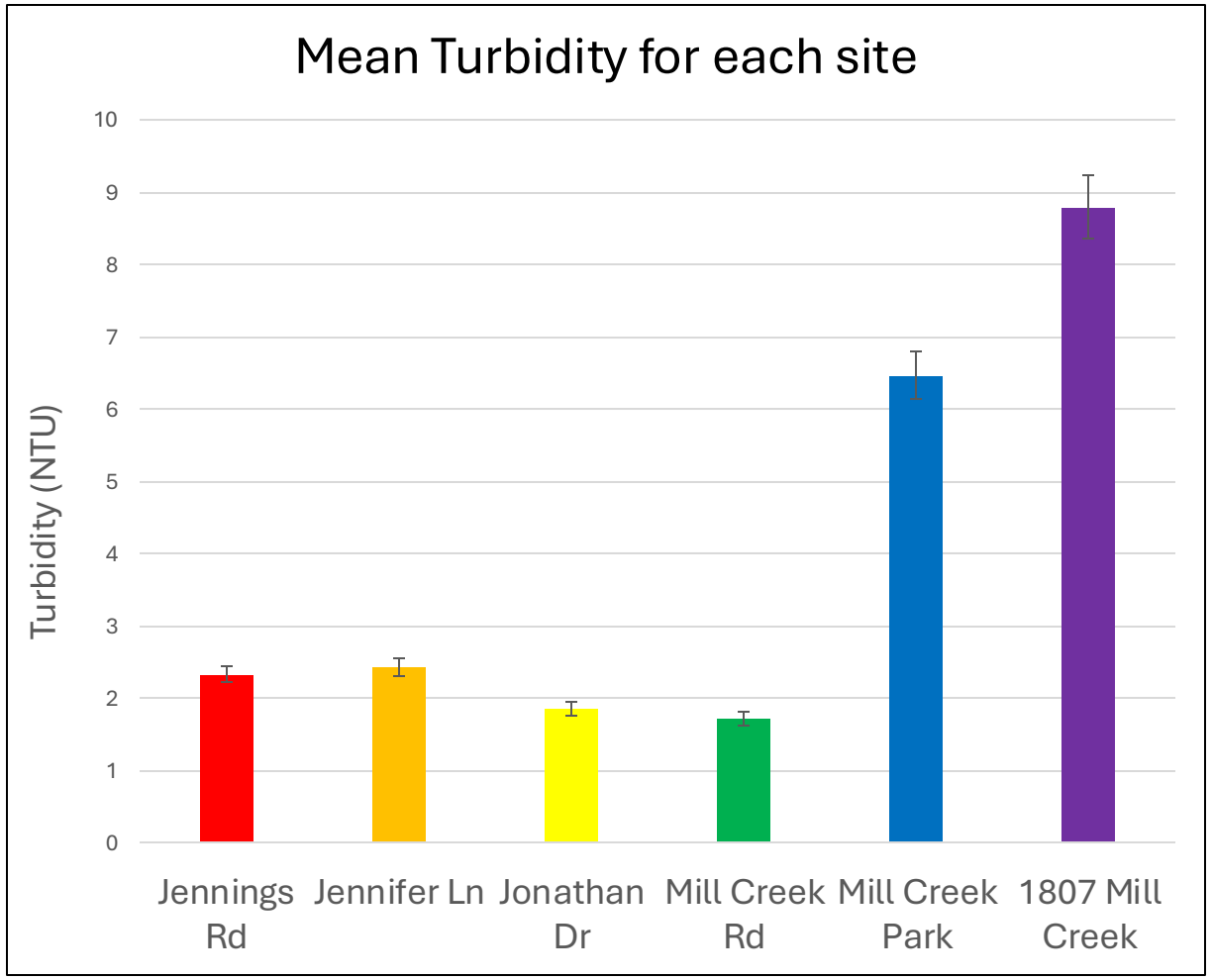


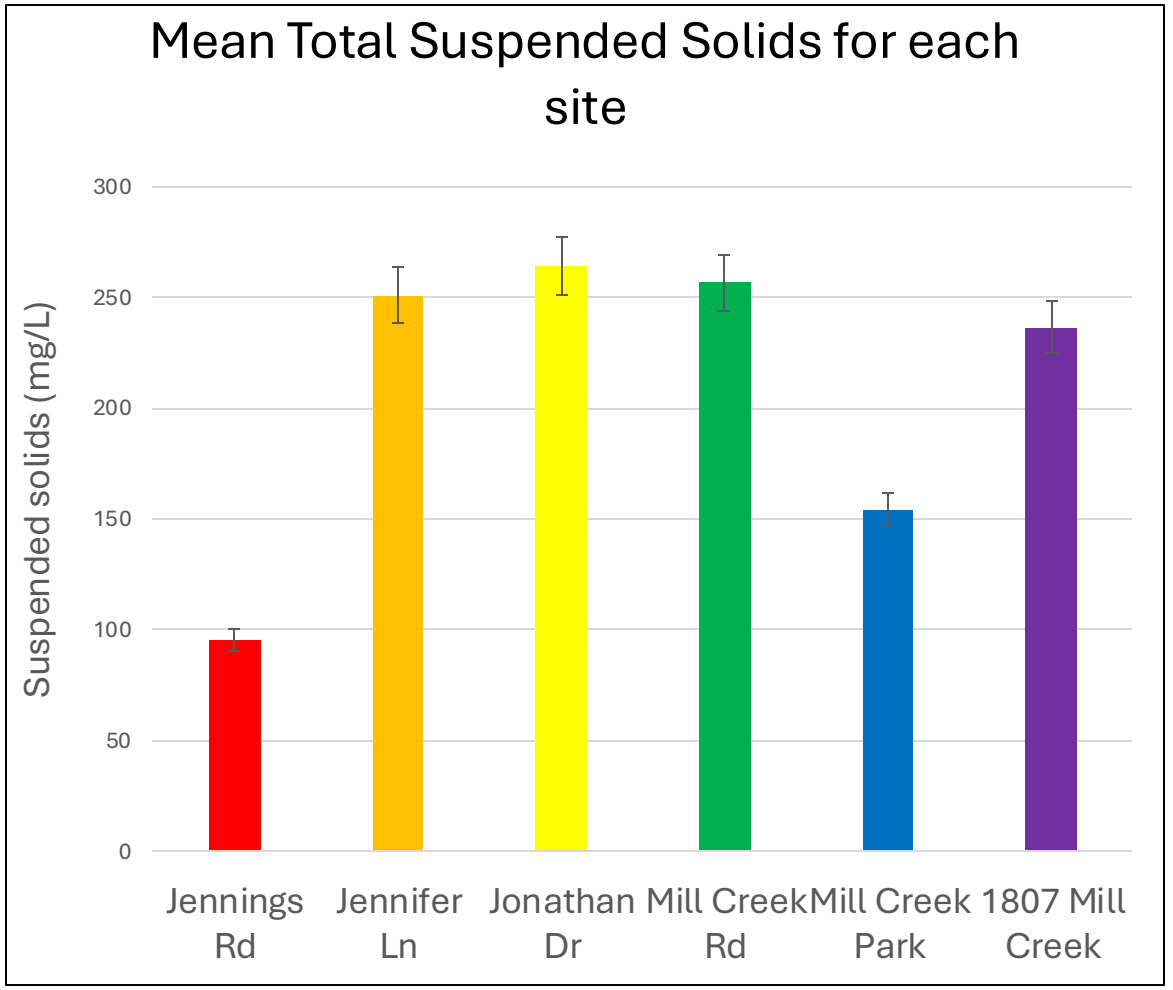
Site review



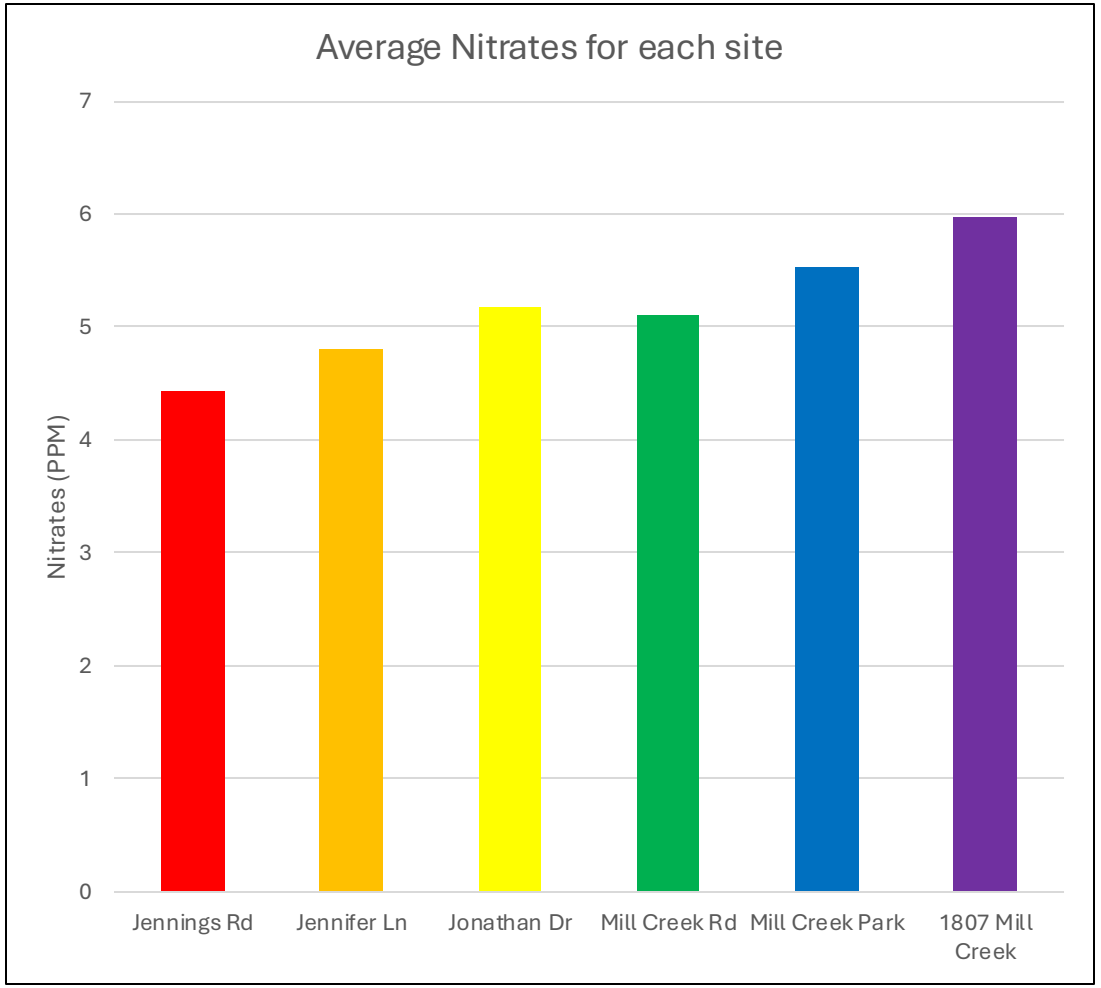
- Sites are color-coded to match with the graphs
- More emphasis on site 2 (Jennifer Ln), site 3 (Jonathan Dr) and site 4 (Mill Creek Rd)

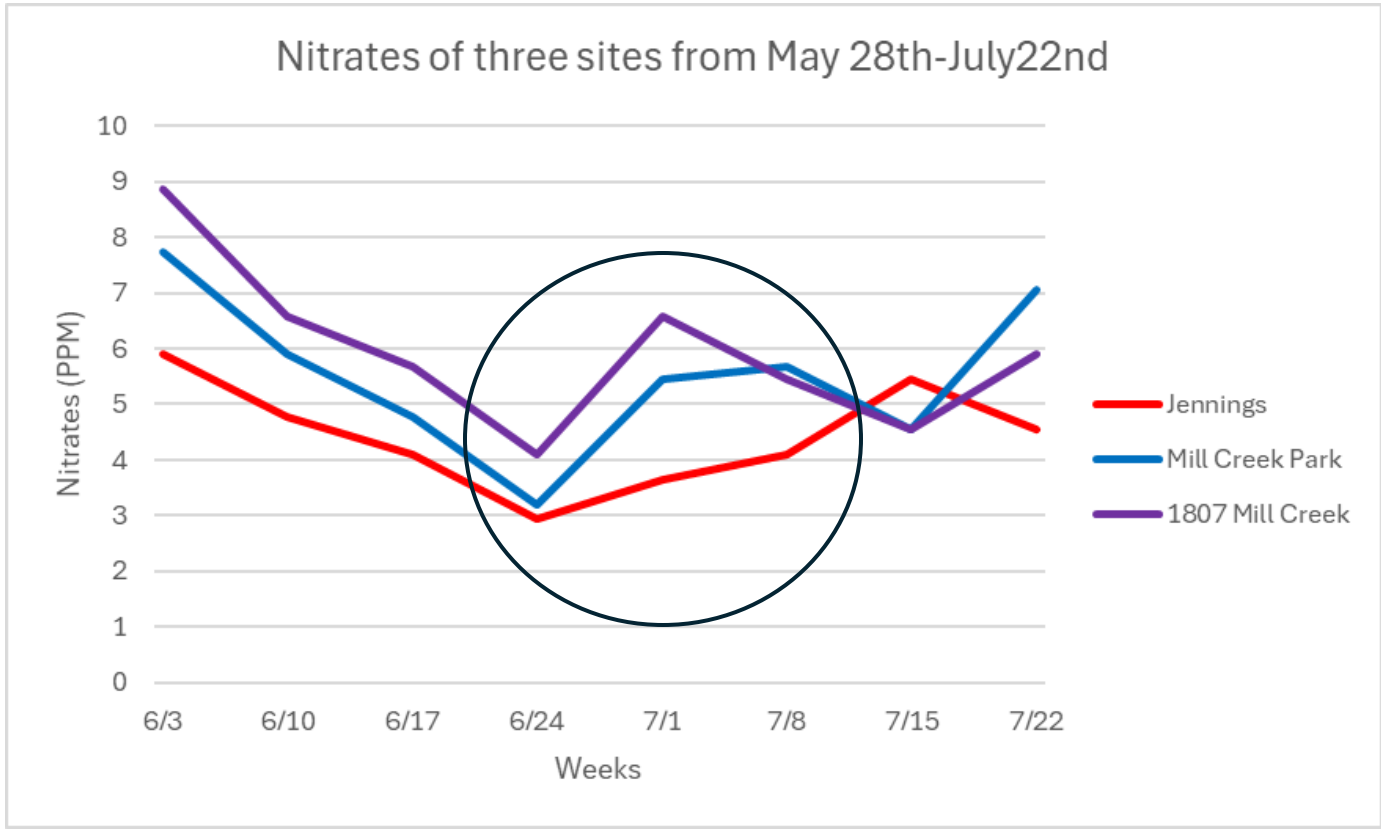
Turbidity (NTU) and Total Suspended Solids (mg/L)



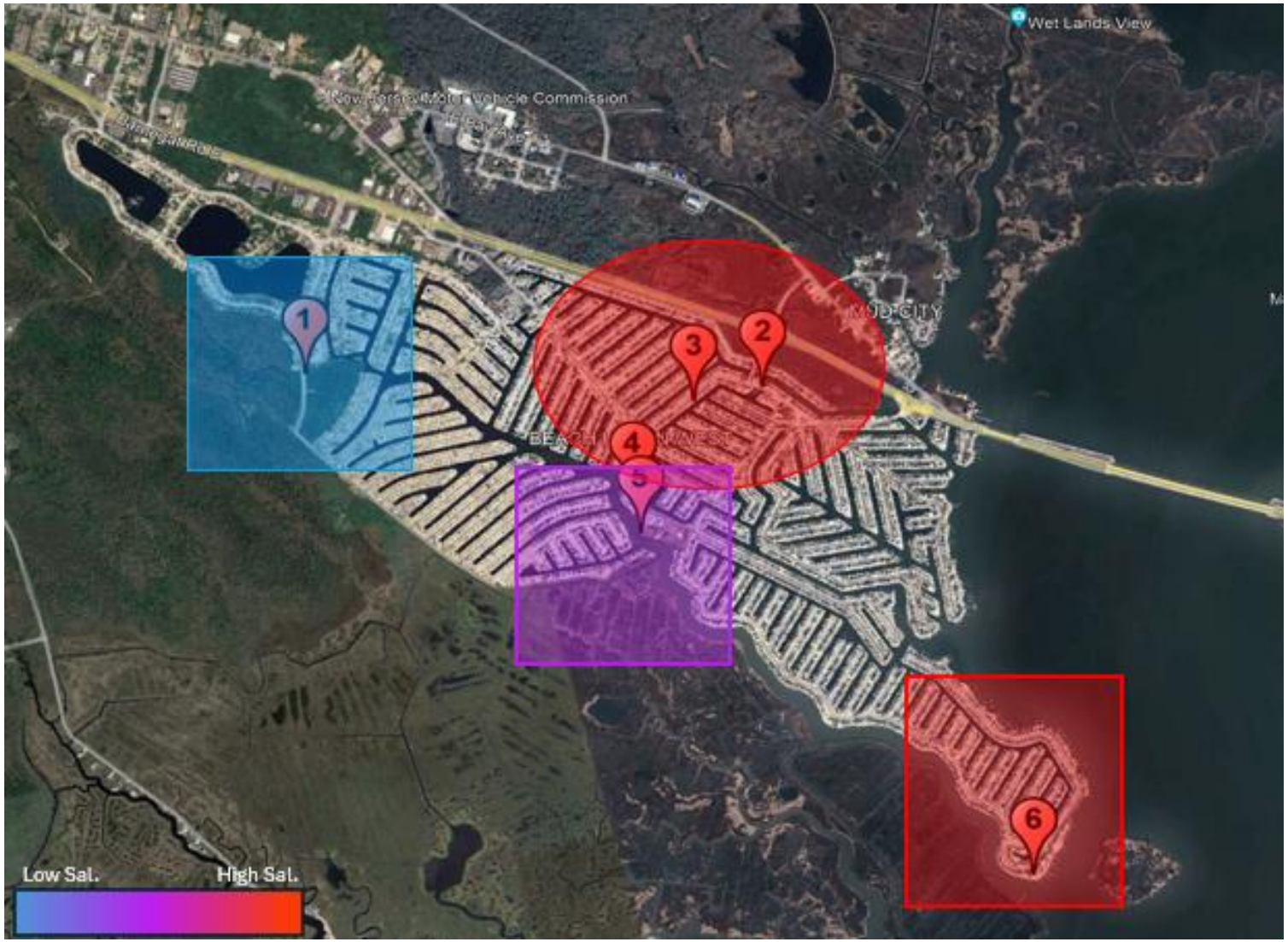


Nitrates (ppm)



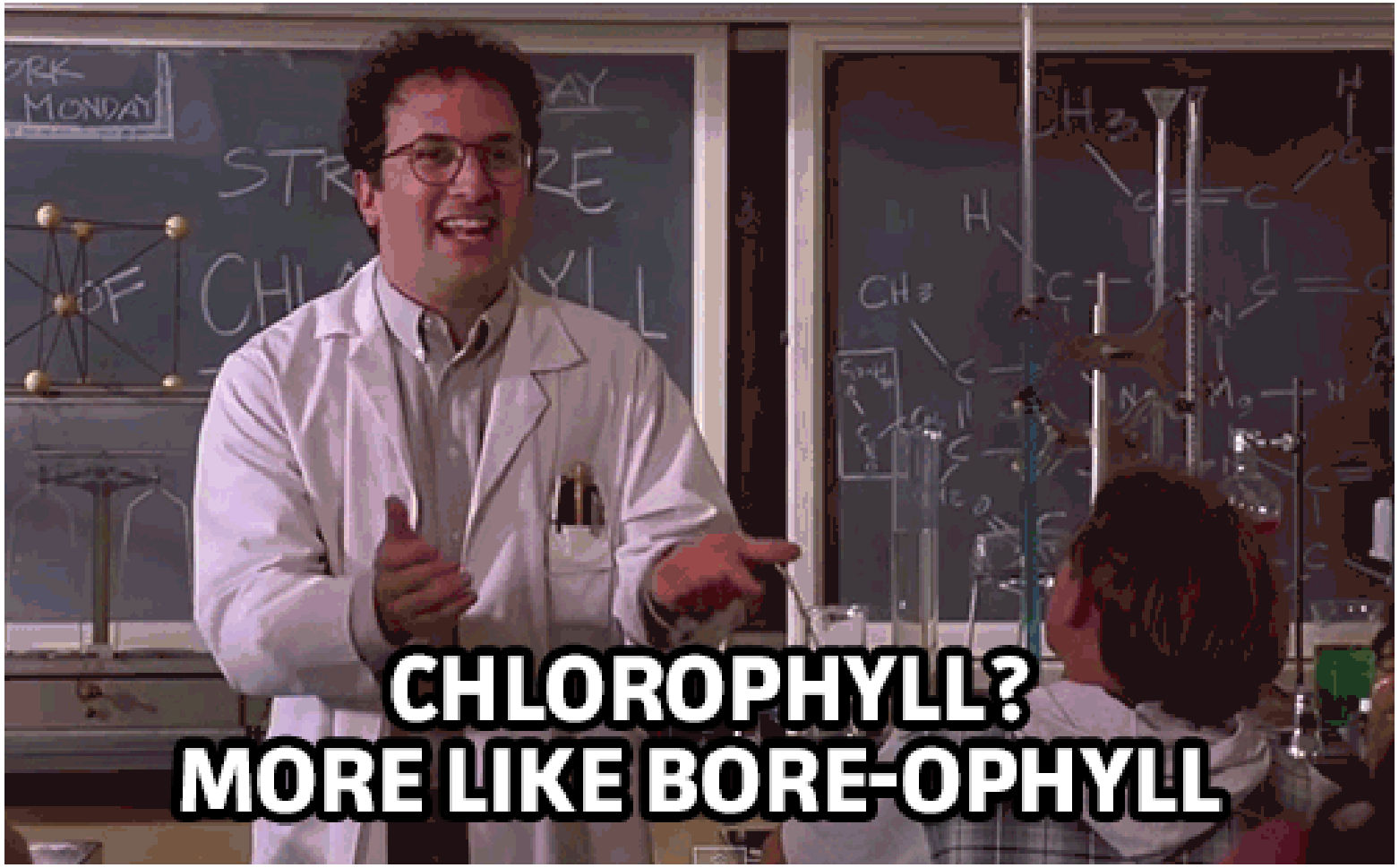


Salinity (Conductivity)

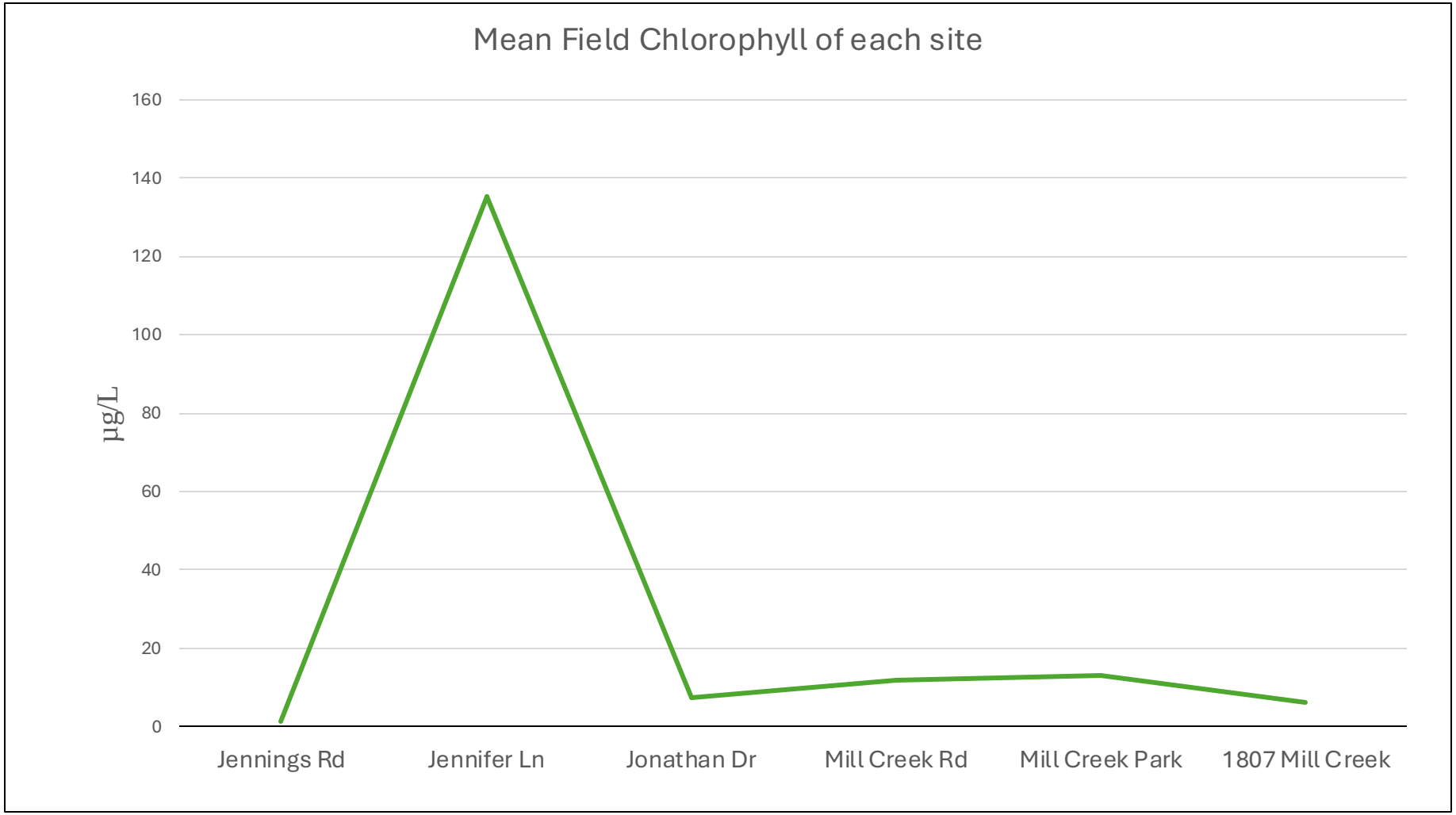


- Blue = low salinity (<1 ppt)
- Purple = slightly higher salinity (10-12 ppt)
- Red = high salinity (24 ppt)

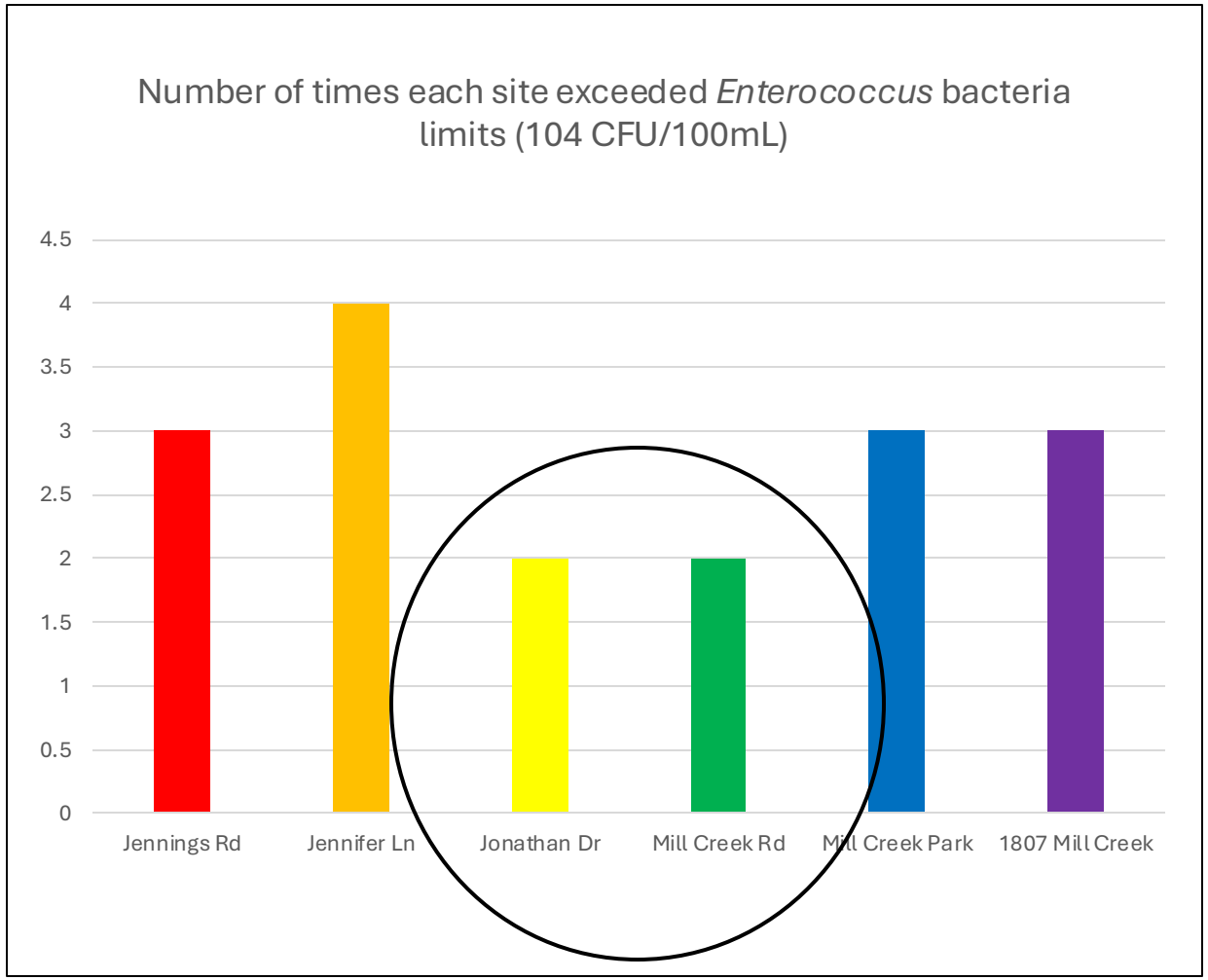
Onto chlorophyll...

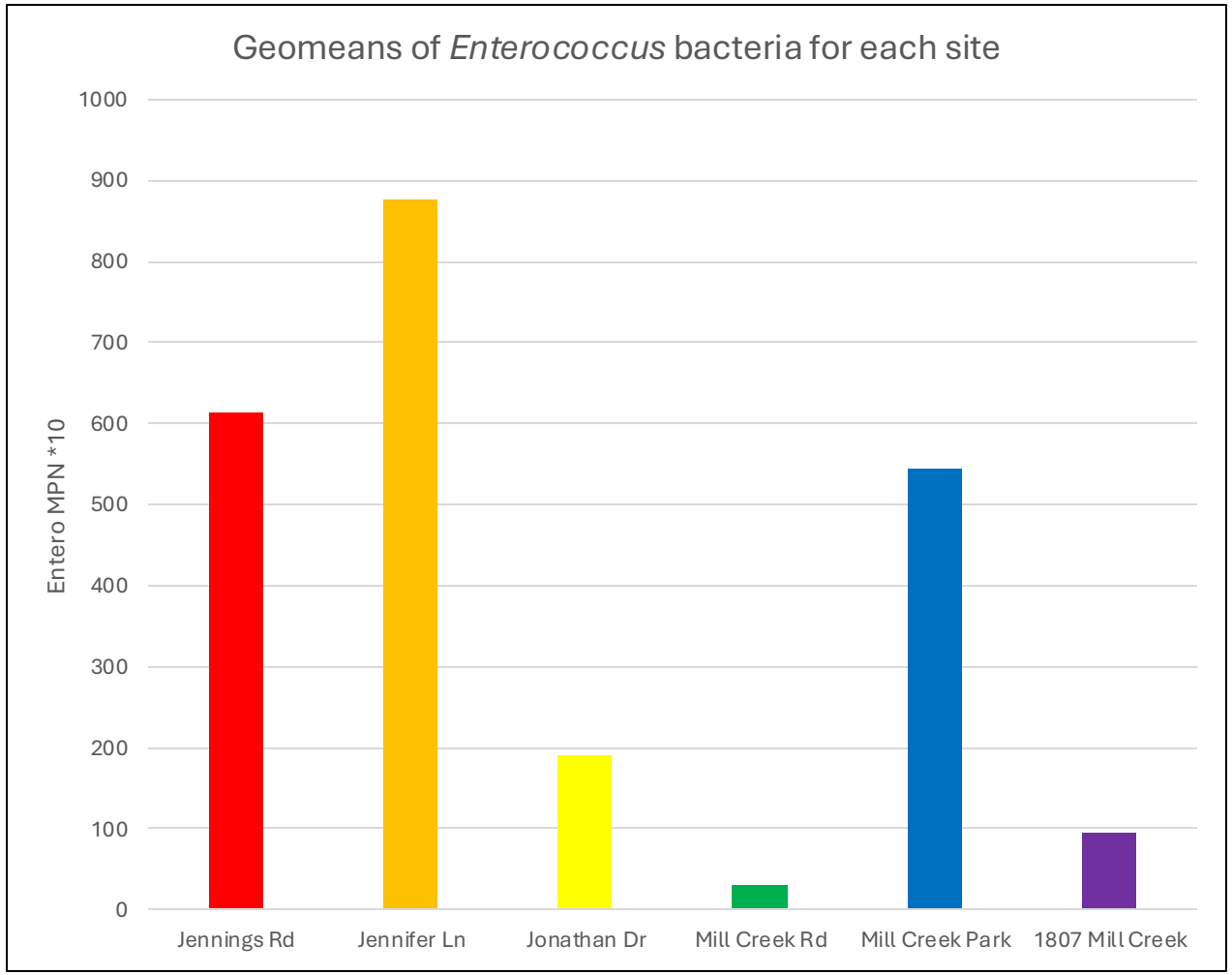


Chlorophyll



Bacteria (*Enterococcus*)





Site #2- Jennifer Lane (Highest Geomean and Frequency of *Enterococcus (> 104 CFU/100 mL*)

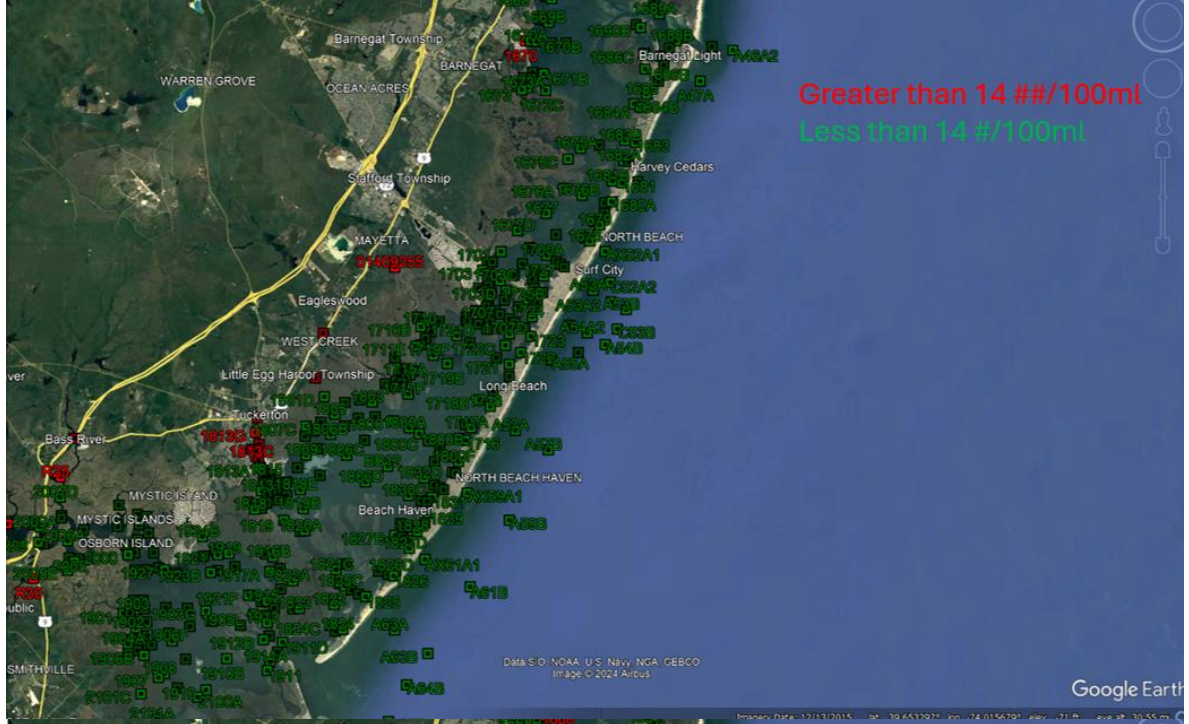
Concluding remarks

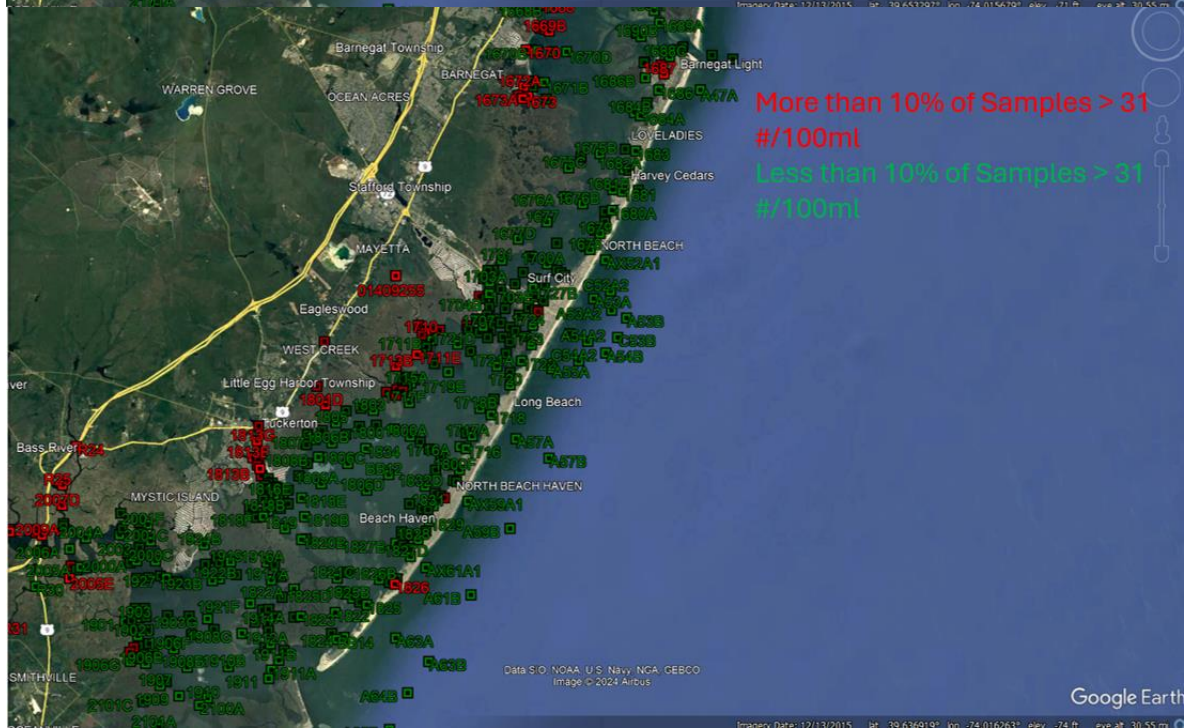
Water quality conditions are as expected regarding temperature, salinity, and pH

Jonathan and Mill Creed Rd showed lower bacteria levels. May be due to new sewer infrastructure

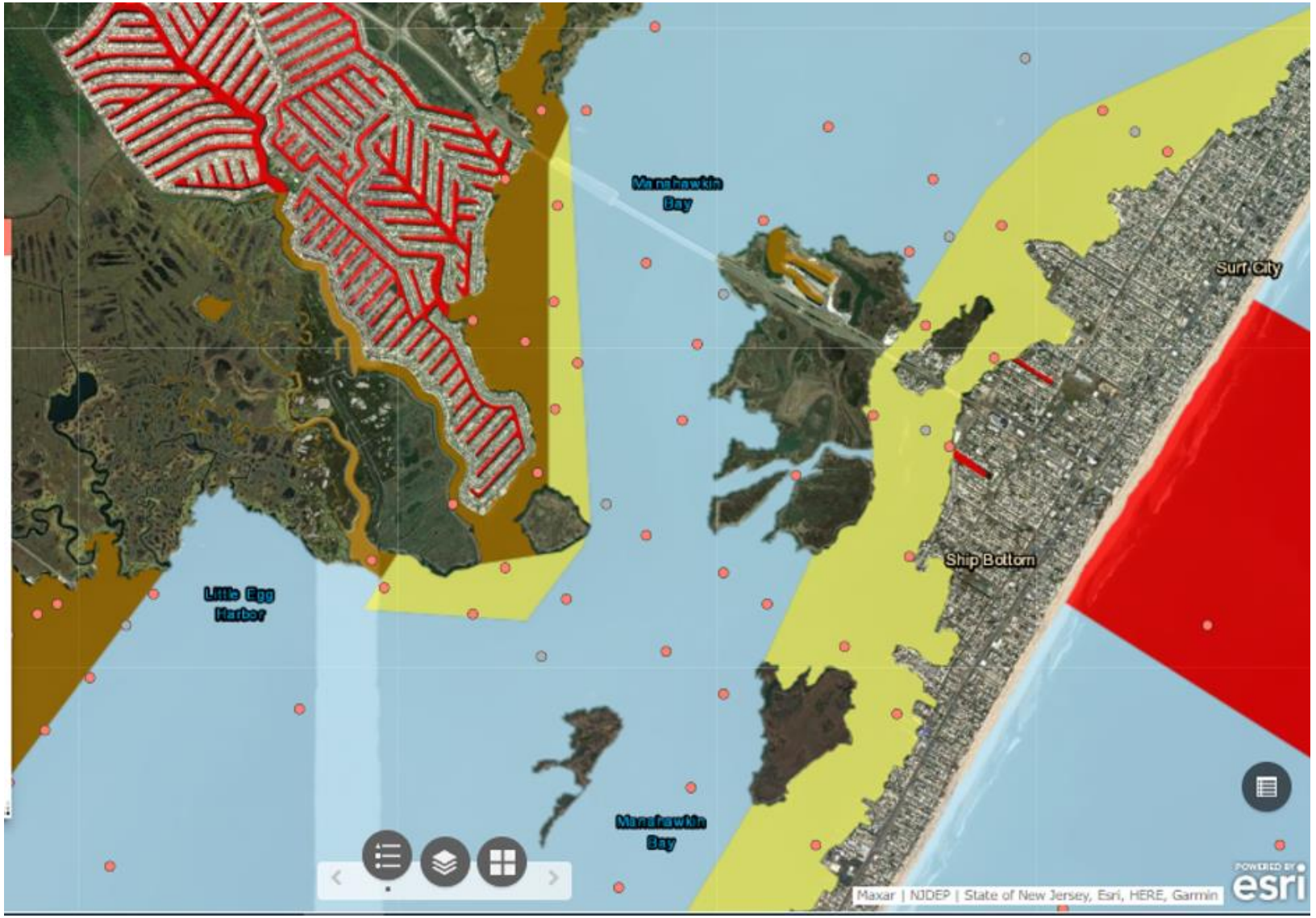
Site #2 (Jennifer Lane) would benefit from an increase in water flow

A continued increase in new infrastructure could help decrease bacteria levels





Concluding remarks continued



Acknowledgements

I would like to thank Save Barnegat Bay for letting me take part in this research, the residents of Beach Haven West, the Marine Academy of Technology and Environmental Science, and Dr. Wnek for guiding me through this learning experience.

Center for Research and
Applied Barnegat Bay Studies

Thanking for watching!

Additional Sources

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