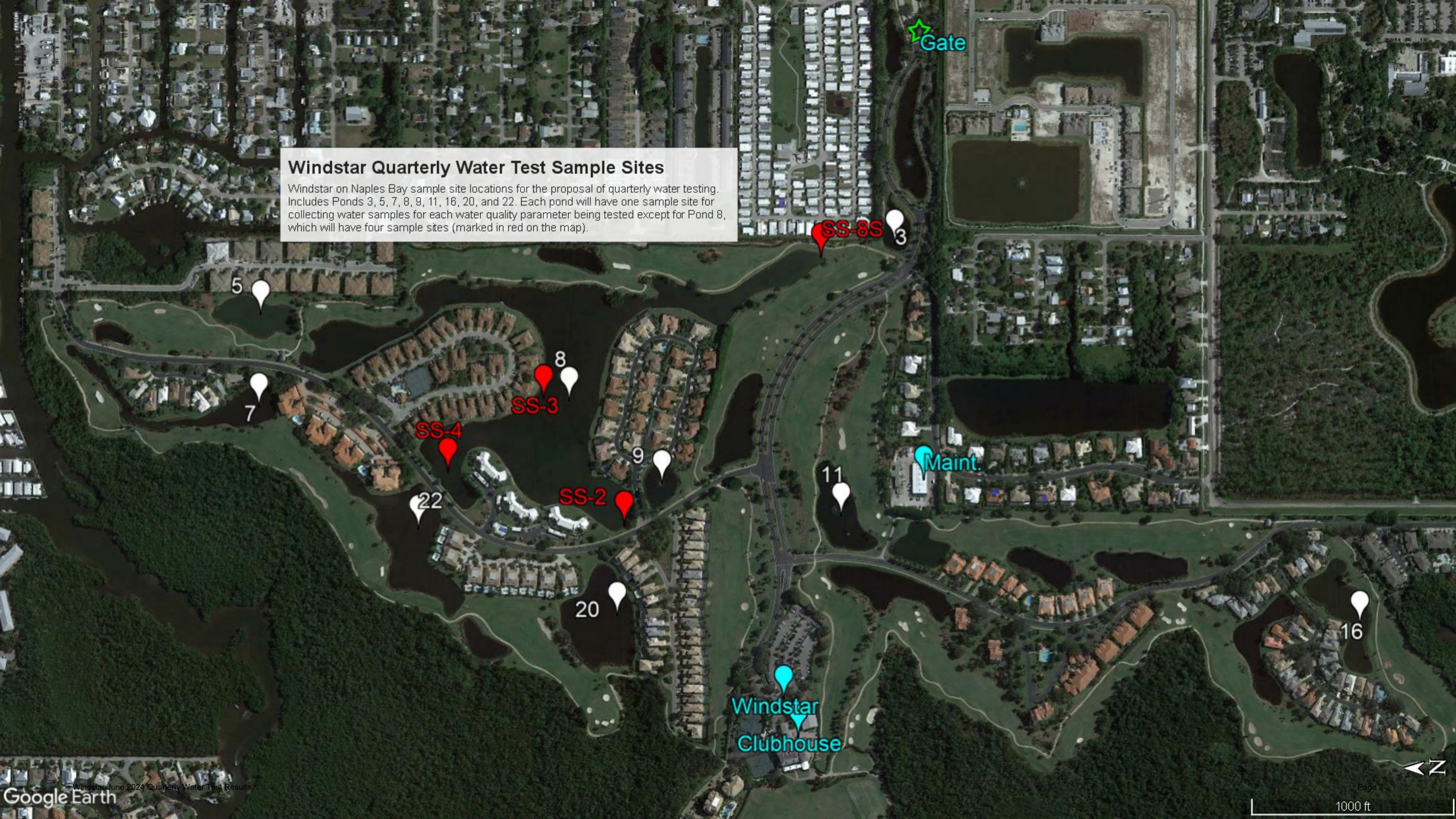
Quarterly Water Test Results

Second Quarter – June 19th, 2024

Windstar

Ponds 3, 5, 7, 9, 11, 20, 22, and 8 (SS-2, SS-3, SS-4, SS8S)

www.AdvancedAquatic.com
lakes@advancedaquatic.com
292 S. Military Trail – Deerfield Beach, FL 33442
Locations in: Deerfield Beach, Fort Myers, Port St. Lucie, and Clearwater/Tampa
1-800-491-9621


Windstar Quarterly Water Test Sample Sites
Windstar on Naples Bay sample site locations for the proposal of quarterly water testing. Includes Ponds 3, 5, 7, 8, 9, 11, 16, 20, and 22. Each pond will have one sample site for collecting water samples for each water quality parameter being tested except for Pond 8, which will have four sample sites (marked in red on the map).
Gate
SS-8S
3
5
8
SS-3
7
SS-4
9
11
Maint.
22
SS-2
20
16
Windstar
Clubhouse
N
Google Earth
1000 ft

Water test analysis descriptions

Total Phosphorous (TP)

Is the measurement of all forms of phosphorous; inorganic, organic, particulate and dissolved. Excess phosphorous is the prime contributor to eutrophication in most water systems. Measuring the amount of phosphorus indicates how productive and susceptible to algae blooms the pond is.

Total Nitrogen (TN)

An important test indicating the concentration of organic and inorganic forms of nitrogen that are in the water column. Nitrogen is one of the primary nutrients required by plants and algae for growth. At high levels, and in combination with phosphorous, plant and algae growth can excel to undesirable levels.

Chlorophyll-a

Determines the biomass of planktonic algae (phytoplankton) in the waterbody. High concentrations are the direct result of large amounts of nutrients that are available in the water column. An important test to indicate the productivity and trophic status of a pond.

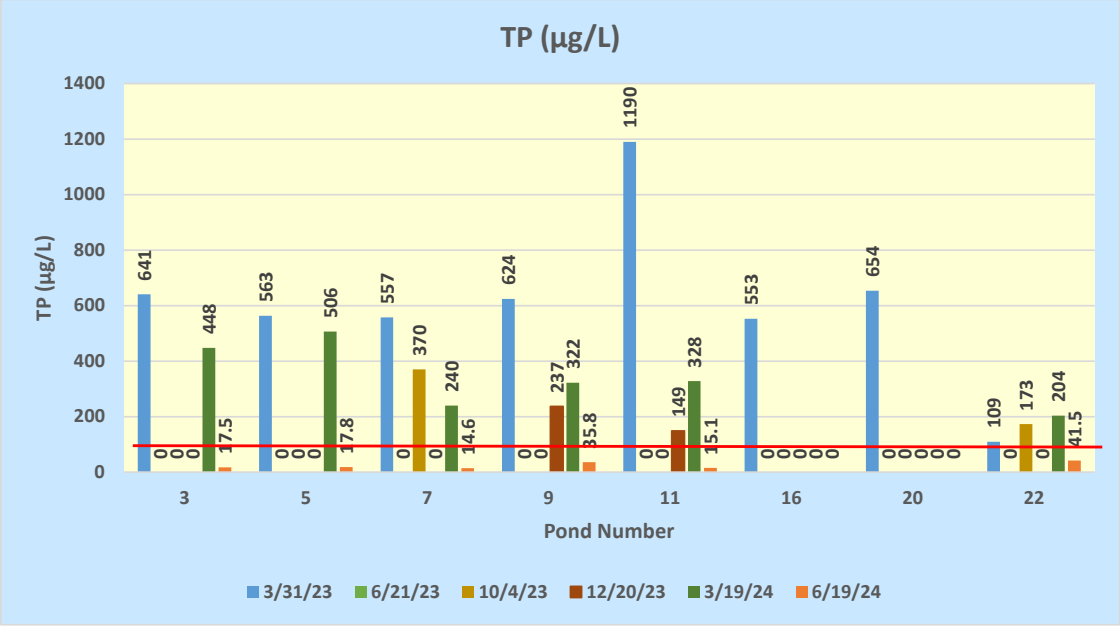
Temperature (°F)

Is a very important measurement and greatly influences the daily chemistry of a pond. The higher the temperature (to a point) the more biological activity and growth. Warmer water temperatures hold less oxygen, and could trigger a fish kill in a nutrient rich pond.

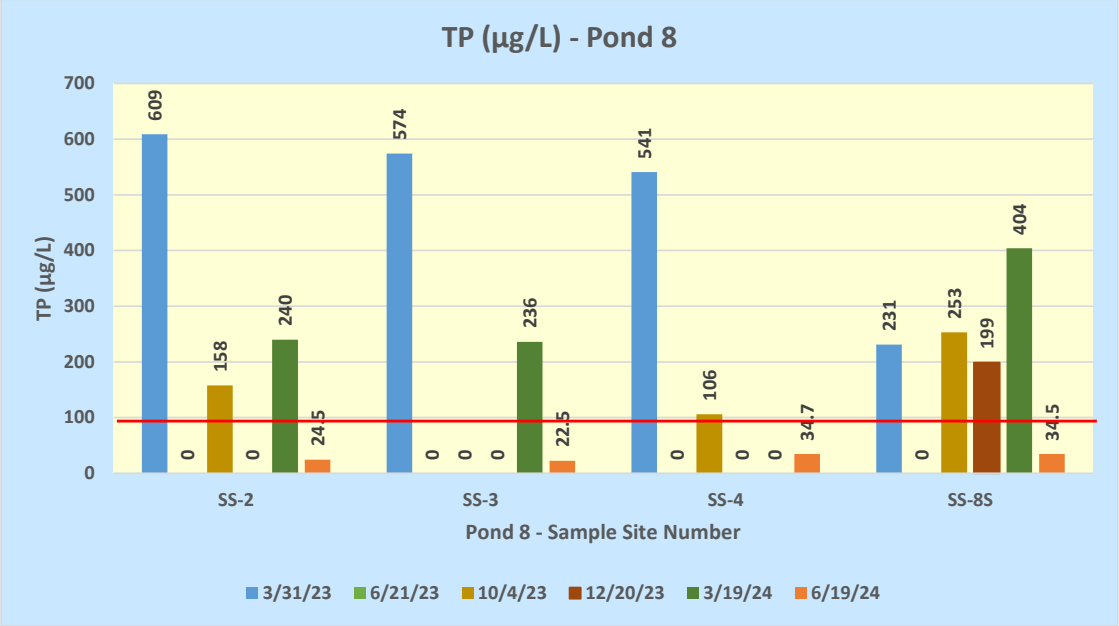
Electrical Conductivity (EC)

Water has the ability to dissolve many substances as it moves across a watershed. This measurement is the number of dissolved solids or salts that have dissolved in a waterbody. This test is a general indicator of the overall health of the pond. Variations from its normal range may indicate an abnormal amount of pollution e.g., phosphorous, nitrogen, etc. that has entered the pond.

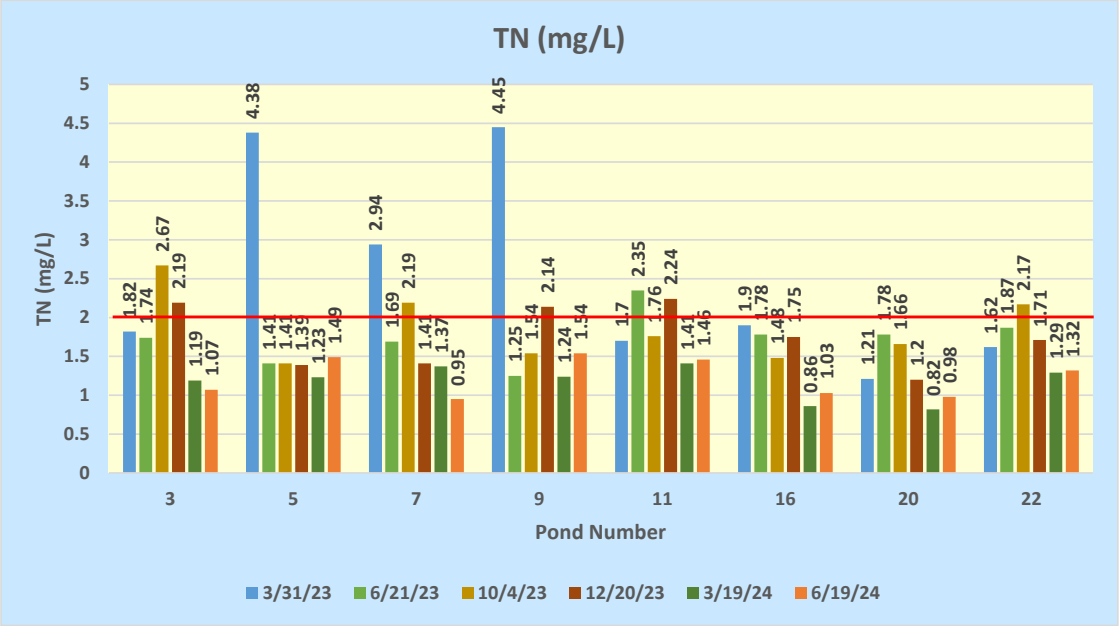
Windstar Quarterly Water tests - Second Quarter 2024
Ponds 3, 5, 7, 9, 11, 16, 20, 22 and Pond 8 (SS-2, SS-3, SS-4, SS-8S)



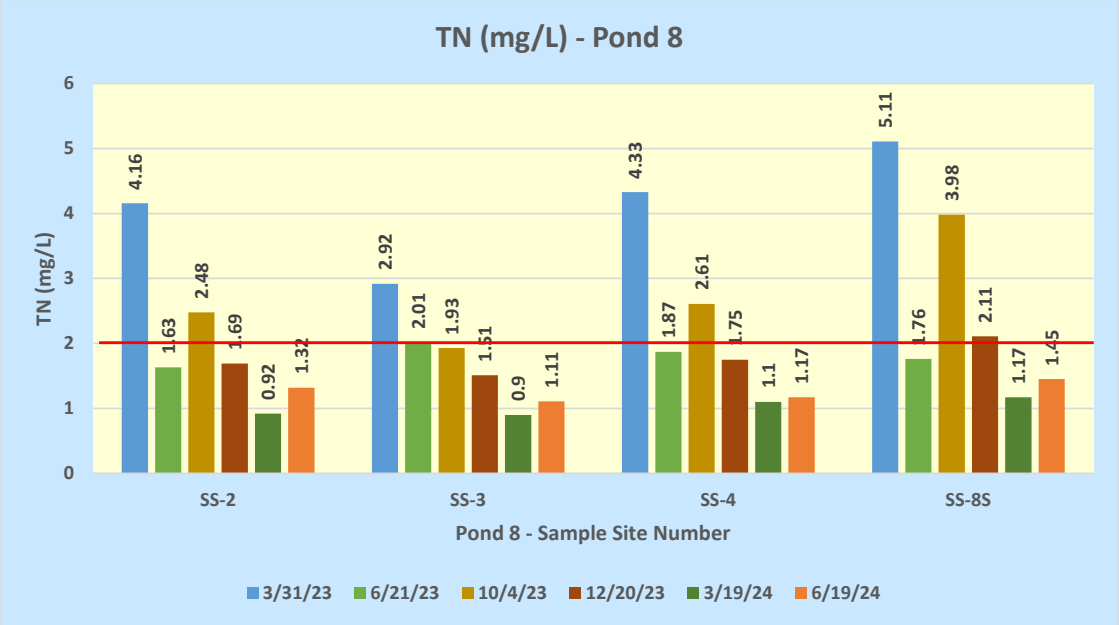
A measurement of inorganic, organic, particulate, and dissolved forms of phosphorous. > 100 = above reasonable range.



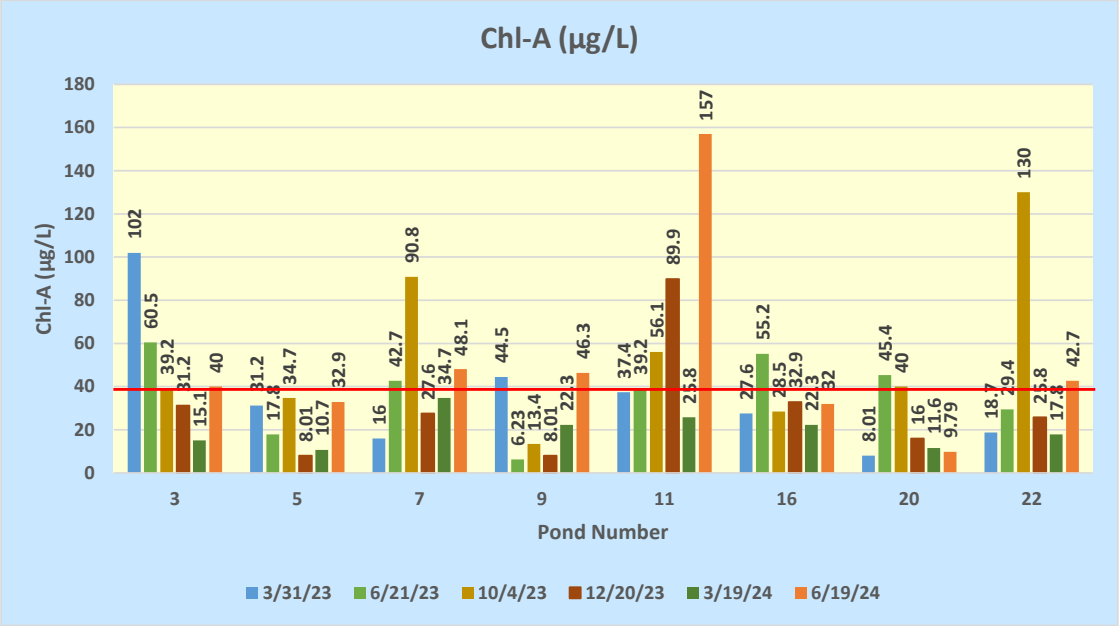
Windstar Quarterly Water tests - Second Quarter 2024
Ponds 3, 5, 7, 9, 11, 16, 20, 22 and Pond 8 (SS-2, SS-3, SS-4, SS-8S)



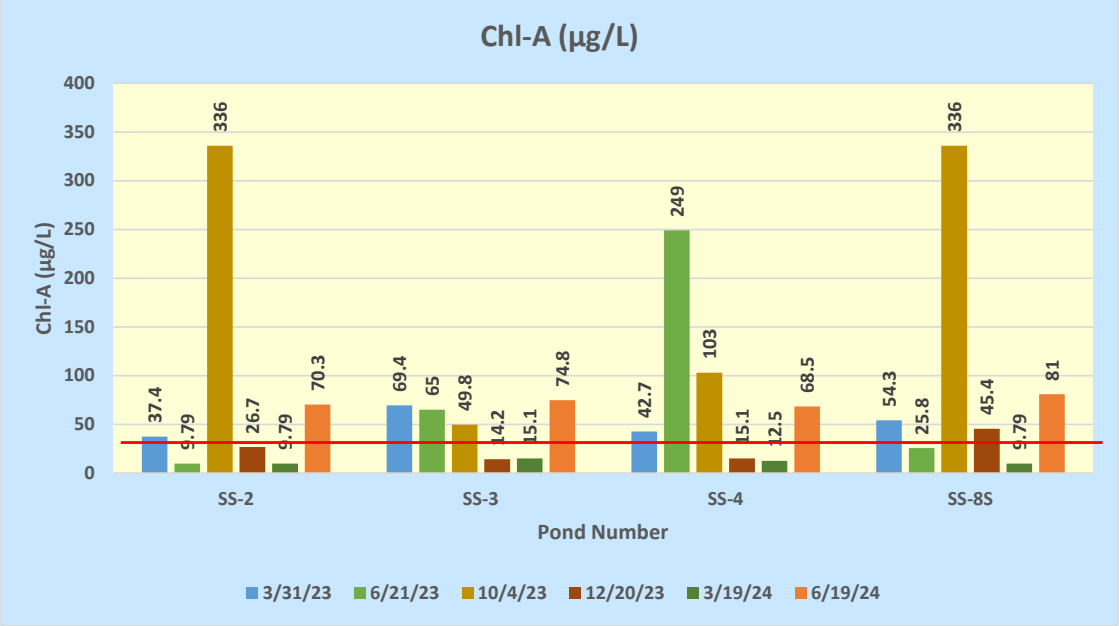
A measurement of both organic and inorganic forms of nitrogen. > 2.0 = above reasonable range.



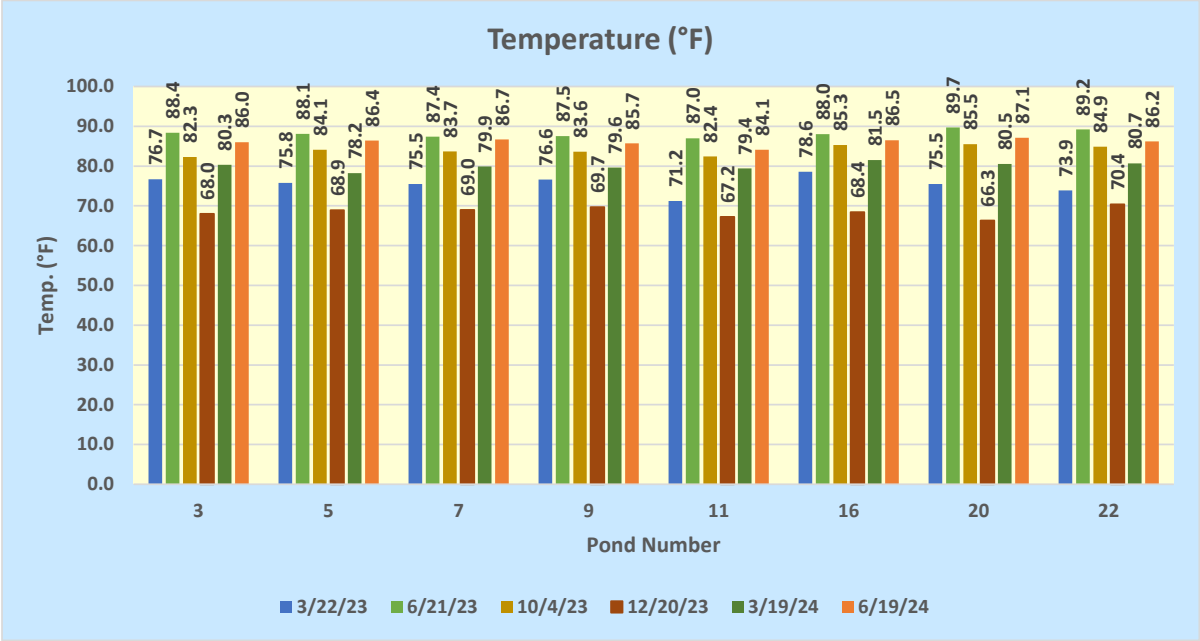
Windstar Quarterly Water tests - Second Quarter 2024
Ponds 3, 5, 7, 9, 11, 16, 20, 22 and Pond 8 (SS-2, SS-3, SS-4, SS-8S)



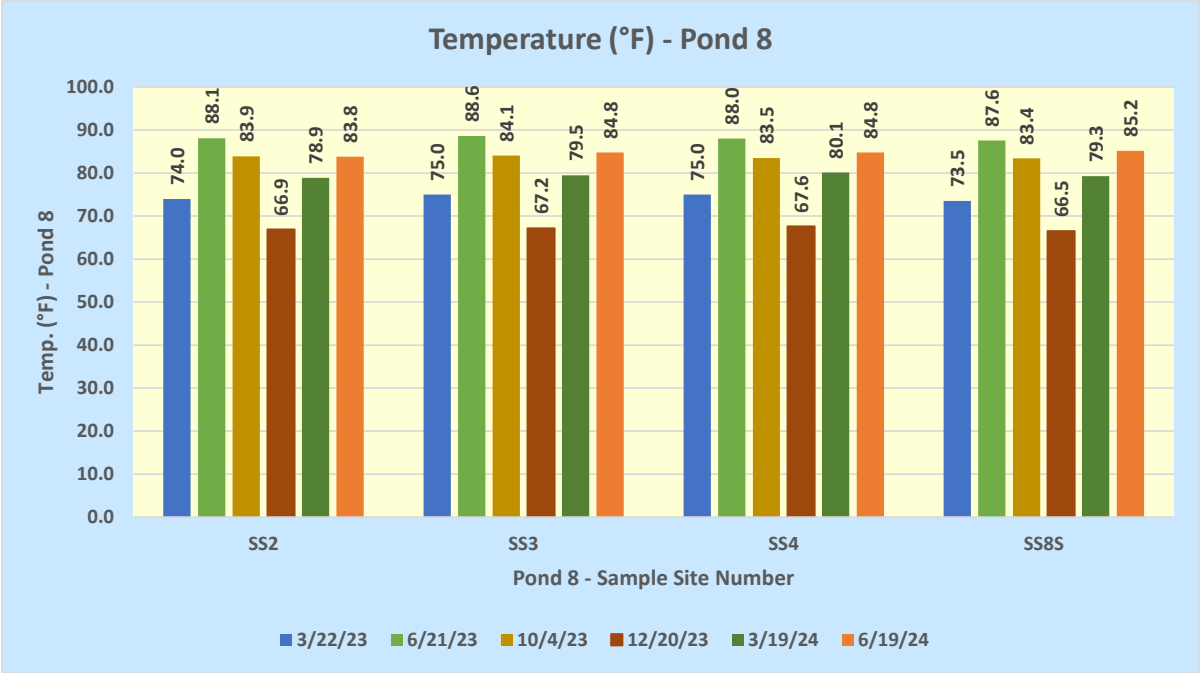
The amount of phytoplankton in a water body and is used to indicate trophic index. > 40 = above reasonable range.



Windstar Quarterly Water tests - Second Quarter 2024
Ponds 3, 5, 7, 9, 11, 16, 20, 22 and Pond 8 (SS-2, SS-3, SS-4, SS-8S)



A measurement of the surface temperature.



What is Electrical Conductivity and why do we measure it?

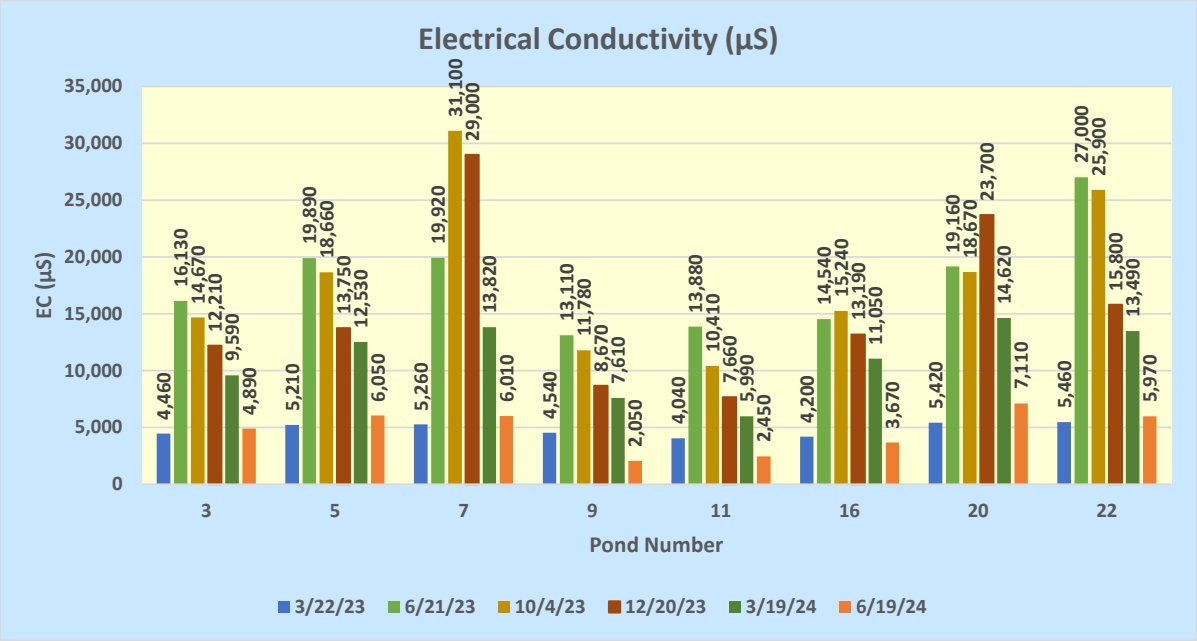
Electrical Conductivity (EC)

Electrical conductivity is the total dissolved salts, measured as ions, in the water. These salts separate into positively and negatively charged ions (kind of like electrolytes in your sports drink). Some negative ions you may have heard of include bicarbonate, carbonate, chloride, sulfate, phosphates, and nitrates; four positive ions you may have heard of include calcium, magnesium, sodium, potassium, and ammonium. Ions in the water affect the quality of water for drinking or irrigation. The concentration of ions also influences what microorganisms will prosper in the water based on their desired salinity range. Conductivity will vary based on where the water source comes from and can be a good indicator of groundwater seepage or a sewage leak. Waters that have been heavily impacted by industry can fall into the high conductivity range which is bordering on saline conditions, and is not suitable for some fish or plants.

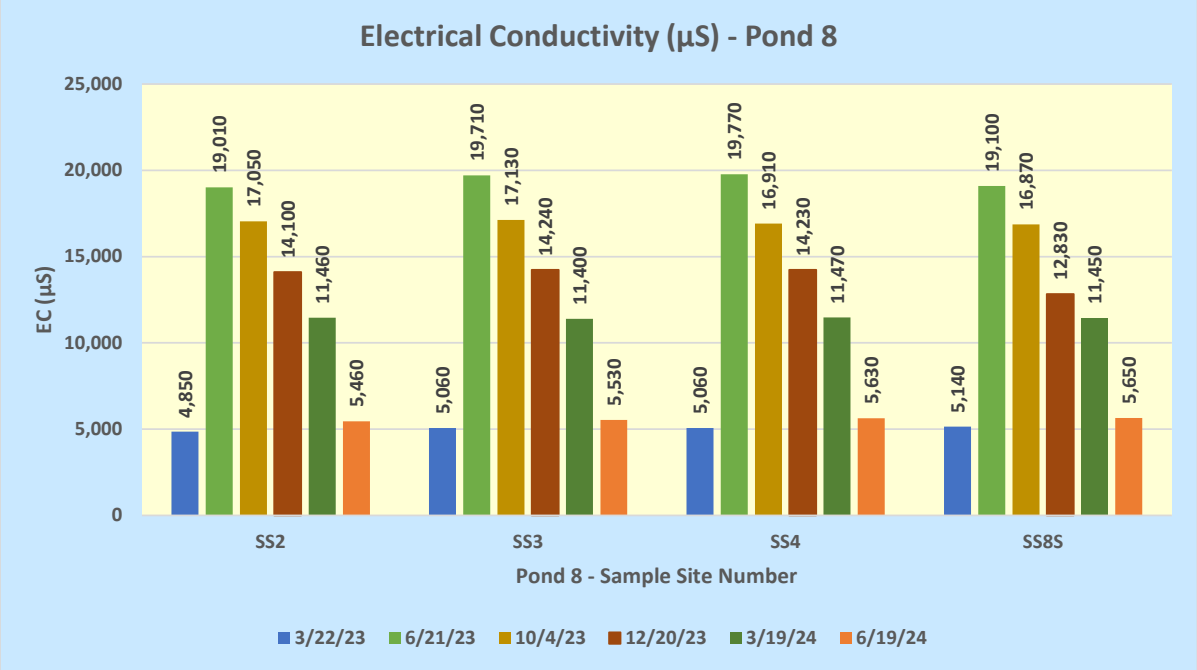
For reference:

- *0-300 µS = Excellent water quality. Can be consumed by humans. Can be used for irrigation.*
- *300-800 µS = Good drinking water for humans as long as organic material has been filtered out. Generally good for irrigation, although above 300 µS may start to cause leaves to scorch on sensitive plants.*
- *800-2500 µS = Can be consumed by humans, although it would be preferred to have an EC value on the lower end of this scale (800-1650 µS). Requires special management when used for irrigation – consider suitability of soil, good drainage, and salt tolerance of plants.*
- *2500-10,000 µS = Not recommended for human consumption. Not normally suitable for irrigation although 6000 µS can be used for extremely salt tolerant crops with special management.*
- *10,000+ µS = not suitable for human consumption or irrigation.*

Windstar Quarterly Water tests - Second Quarter 2024
Ponds 3, 5, 7, 9, 11, 16, 20, 22 and Pond 8 (SS-2, SS-3, SS-4, SS-8S)



A measurement of the number of dissolved ions in the water.



Vertical dissolved oxygen (D/O) readings analysis

Water column Dissolved oxygen / Temperature readings (measured at 1' increments)

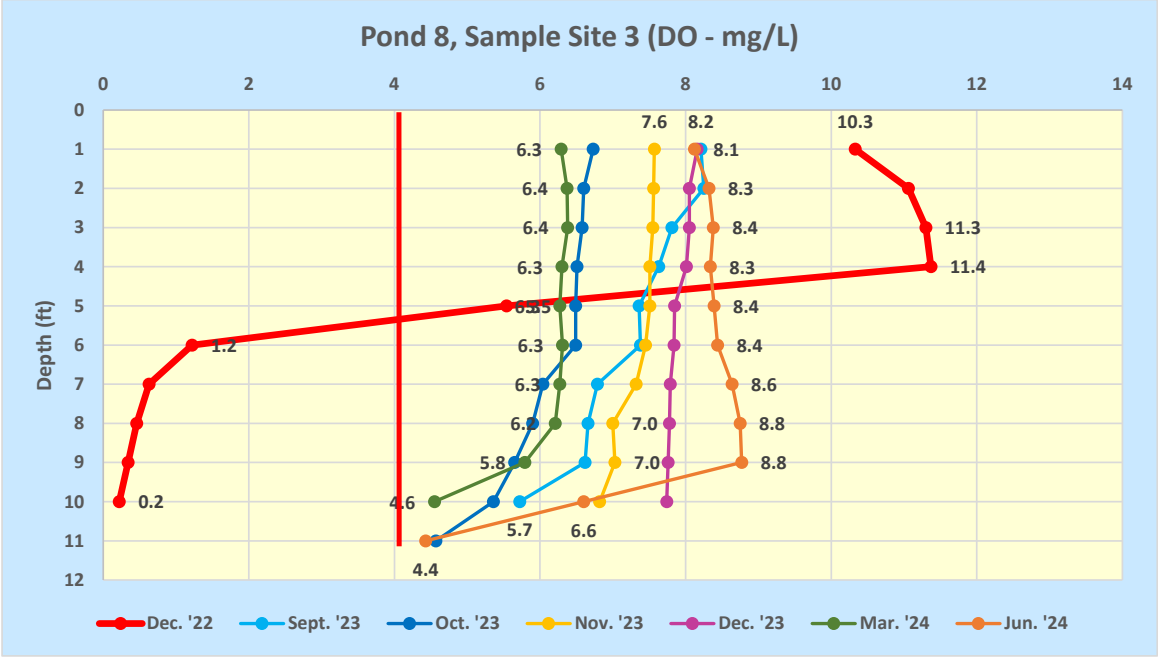
Dissolved oxygen (D/O) is a measure of the amount of dissolved oxygen dissolved in water. The amount can tell us a lot about the water quality and whether the pond can sustain life, as in microorganisms and larger organisms like fish. By combining temperature and D/O levels from the surface to the bottom, we can also determine if stratification is occurring. Stratification can cause dead zones at the bottom of a pond. The dead zones are hypoxic (low oxygen) and sustain very little life. The hypoxic water also triggers a chemical reaction that releases phosphates from the sediments that ultimately feeds algae growth.

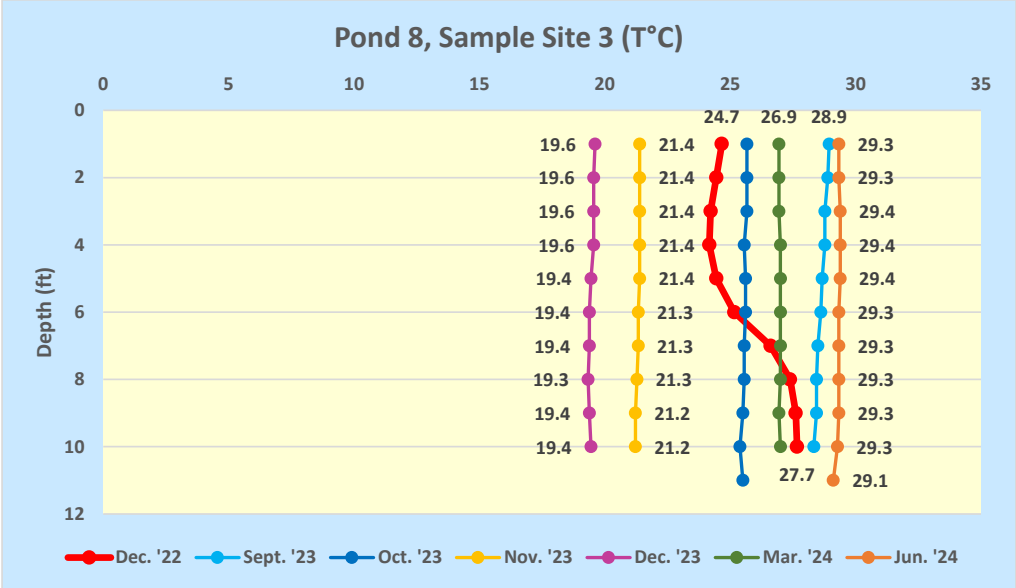
This test is important in determining water quality and if stratification is present. If low D/O oxygen levels or stratification are determined, aeration may be a good choice for improving water quality.

Guidelines for Interpretation of Dissolved Oxygen Readings

- 0-2 mg/L: not enough oxygen to support fish
- 3-4 mg/L: only a few kinds of fish and insects can survive
- 5-7 mg/L: acceptable for warm water fish
- 8-11 mg/L: very good for most stream fish including cold water fish

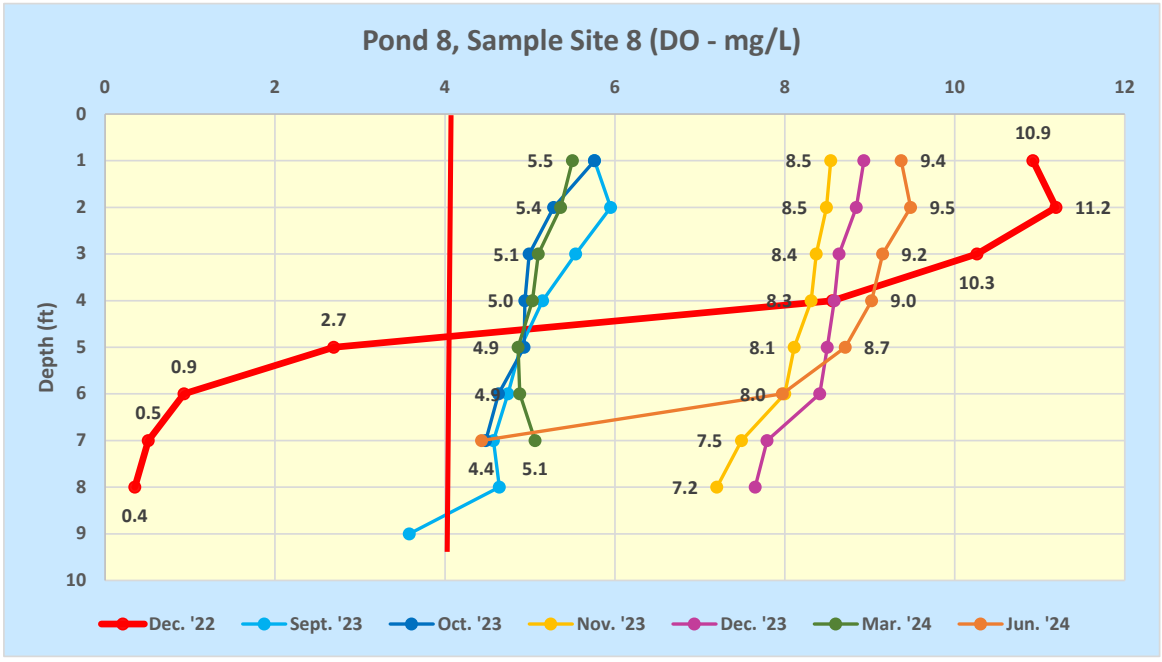
Windstar - Quarterly Post-Hurricane Ian EC and DO Profiling
Pond 8, Sample Site 3

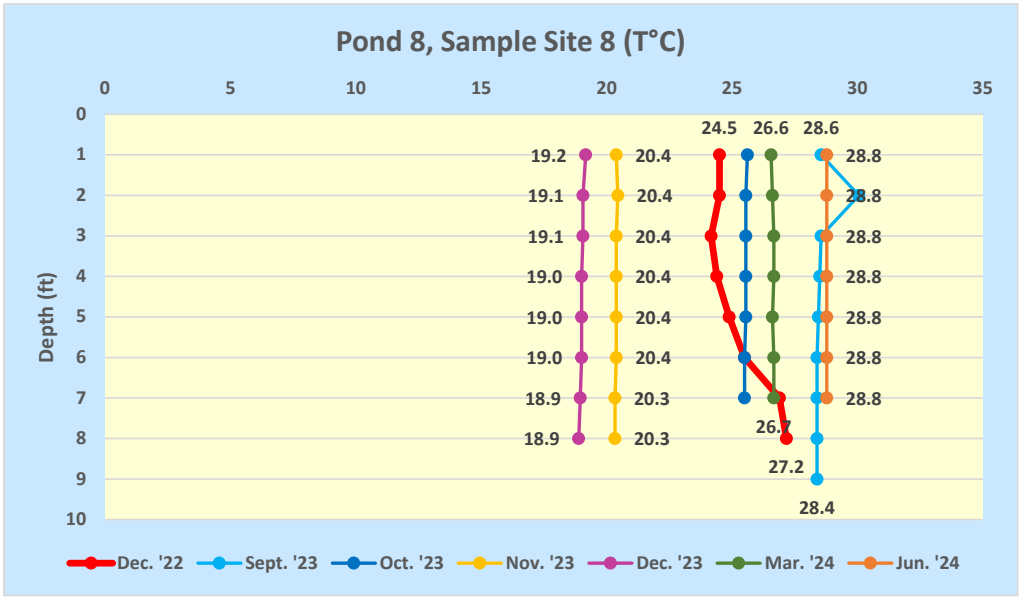




Temp. (°F)	Temp. (°C)
67.0	19.4
67.3	19.6
84.4	29.1
84.8	29.3

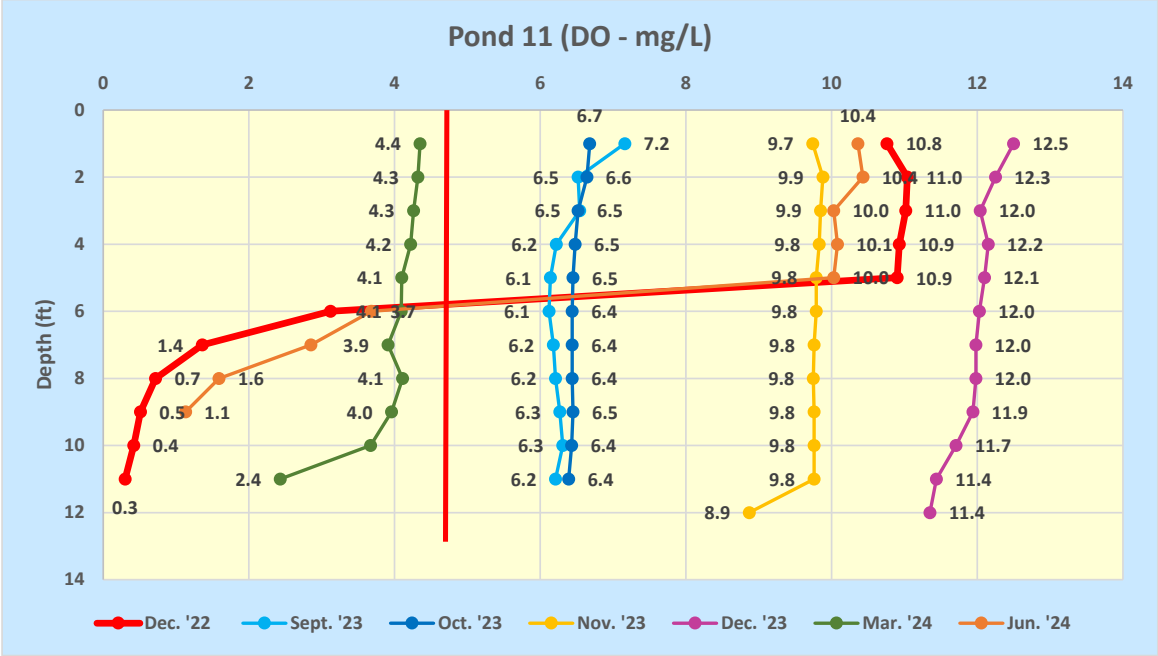
Windstar - Quarterly Post-Hurricane Ian EC and DO Profiling
Pond 8, Sample Site 8

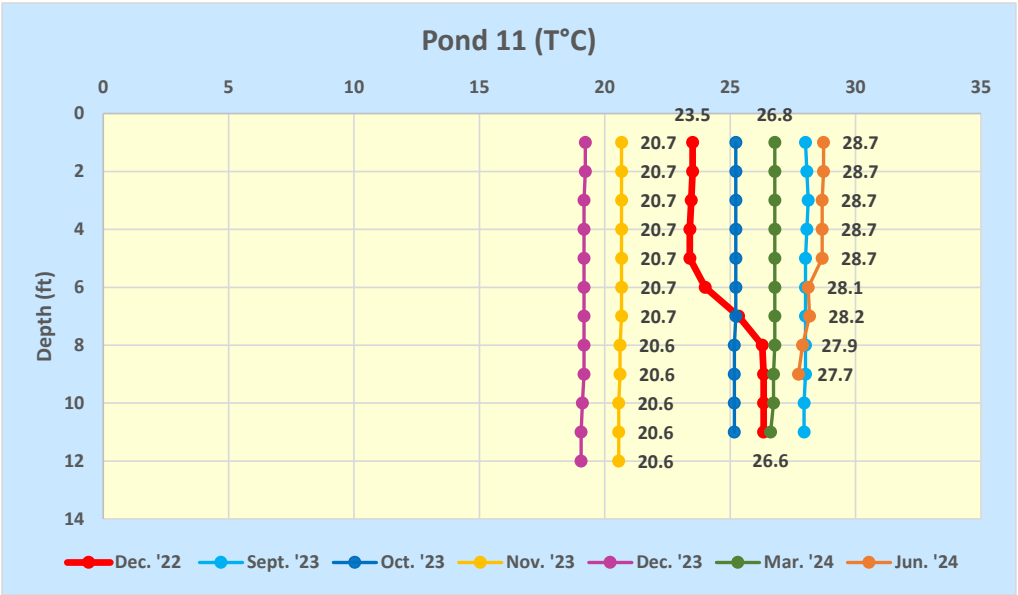




Temp. (°F)	Temp. (°C)
66.0	18.9
66.5	19.2
83.8	28.8
89.4	31.9

Windstar - Quarterly Post-Hurricane Ian EC and DO Profiling
Pond 11





Temp. (°F)	Temp. (°C)
66.3	19.1
66.6	19.2
81.9	27.7
83.7	28.7