ALGAE and CYANOBACTERIA in GREENE ACRES LAKE (2023)

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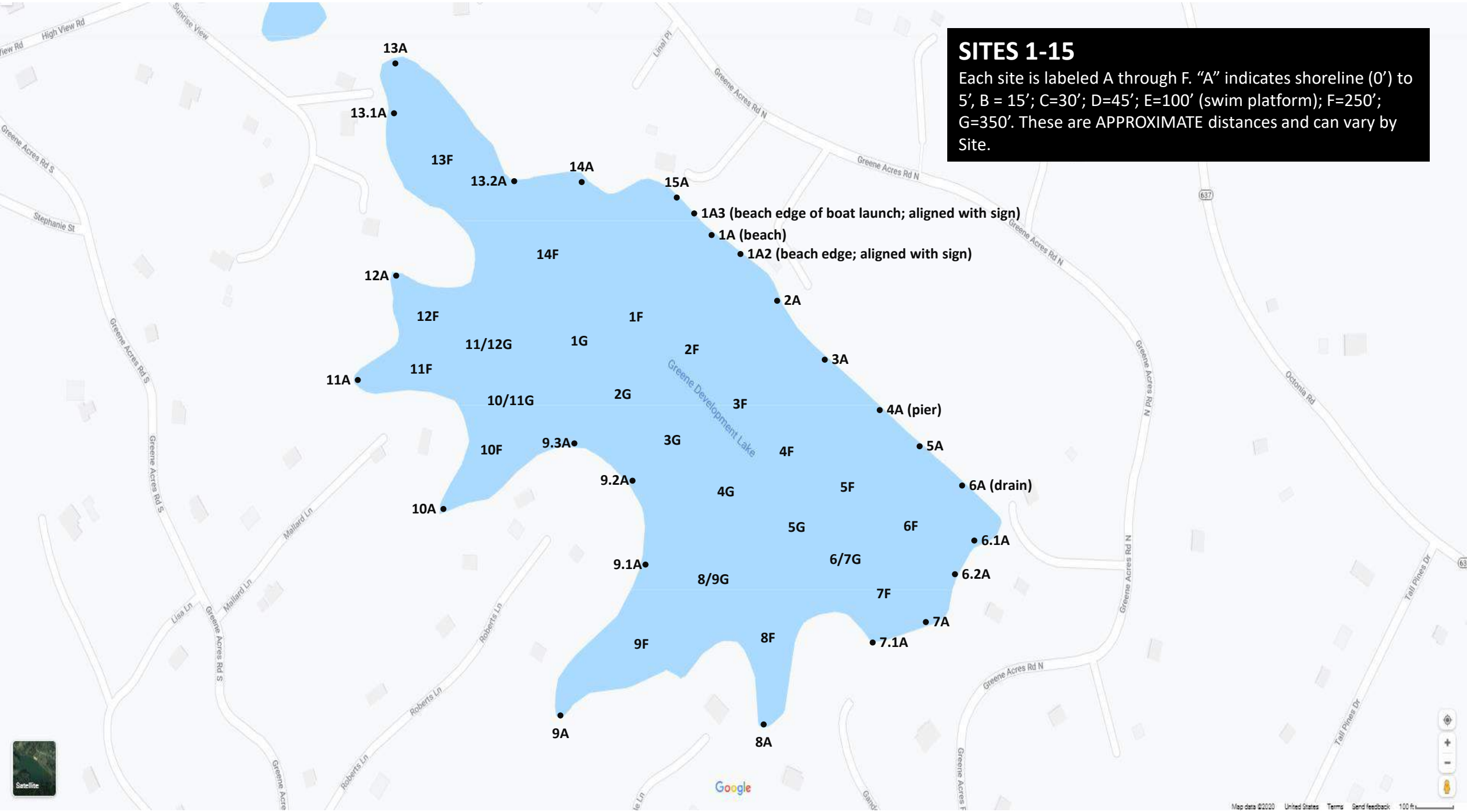
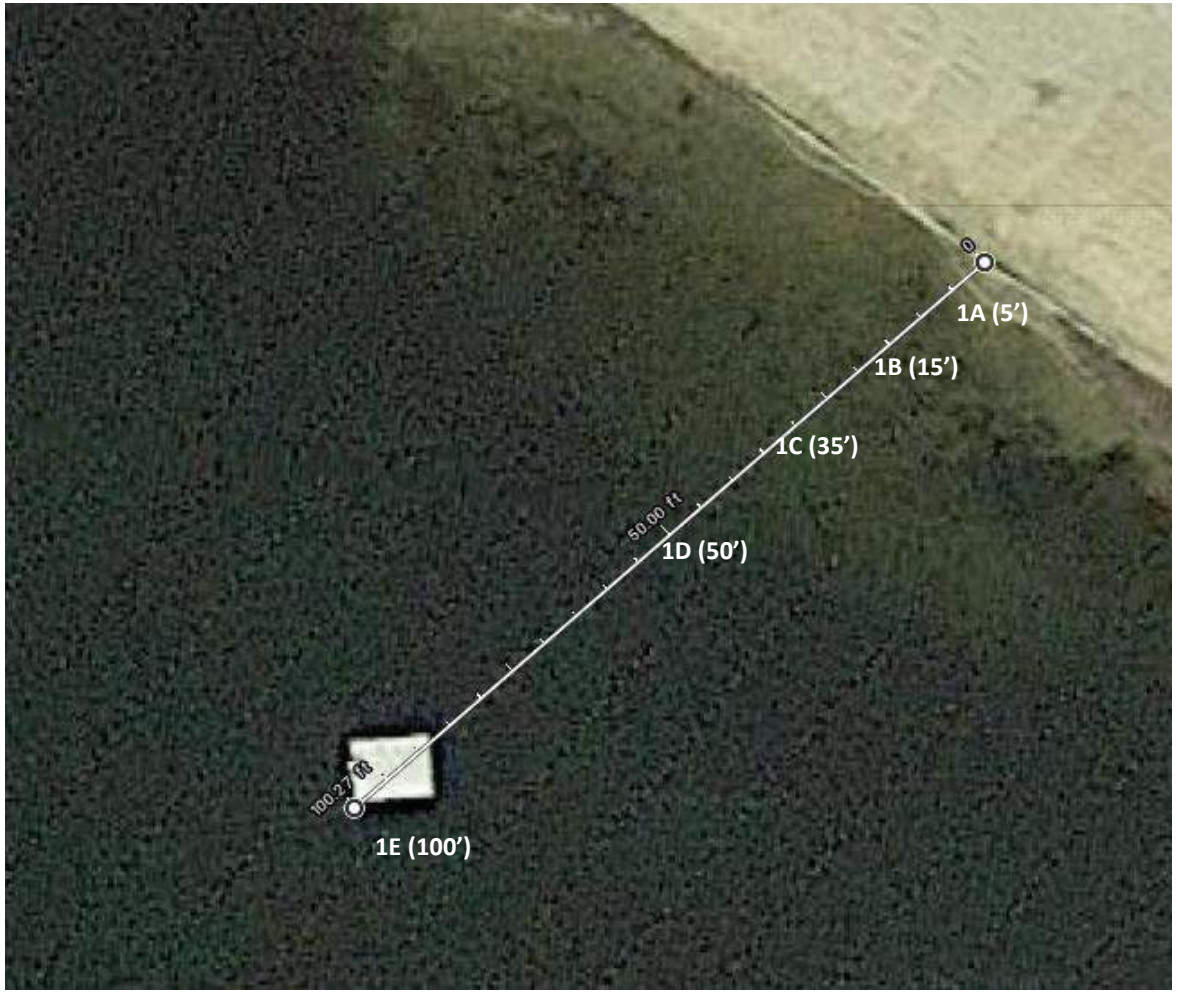
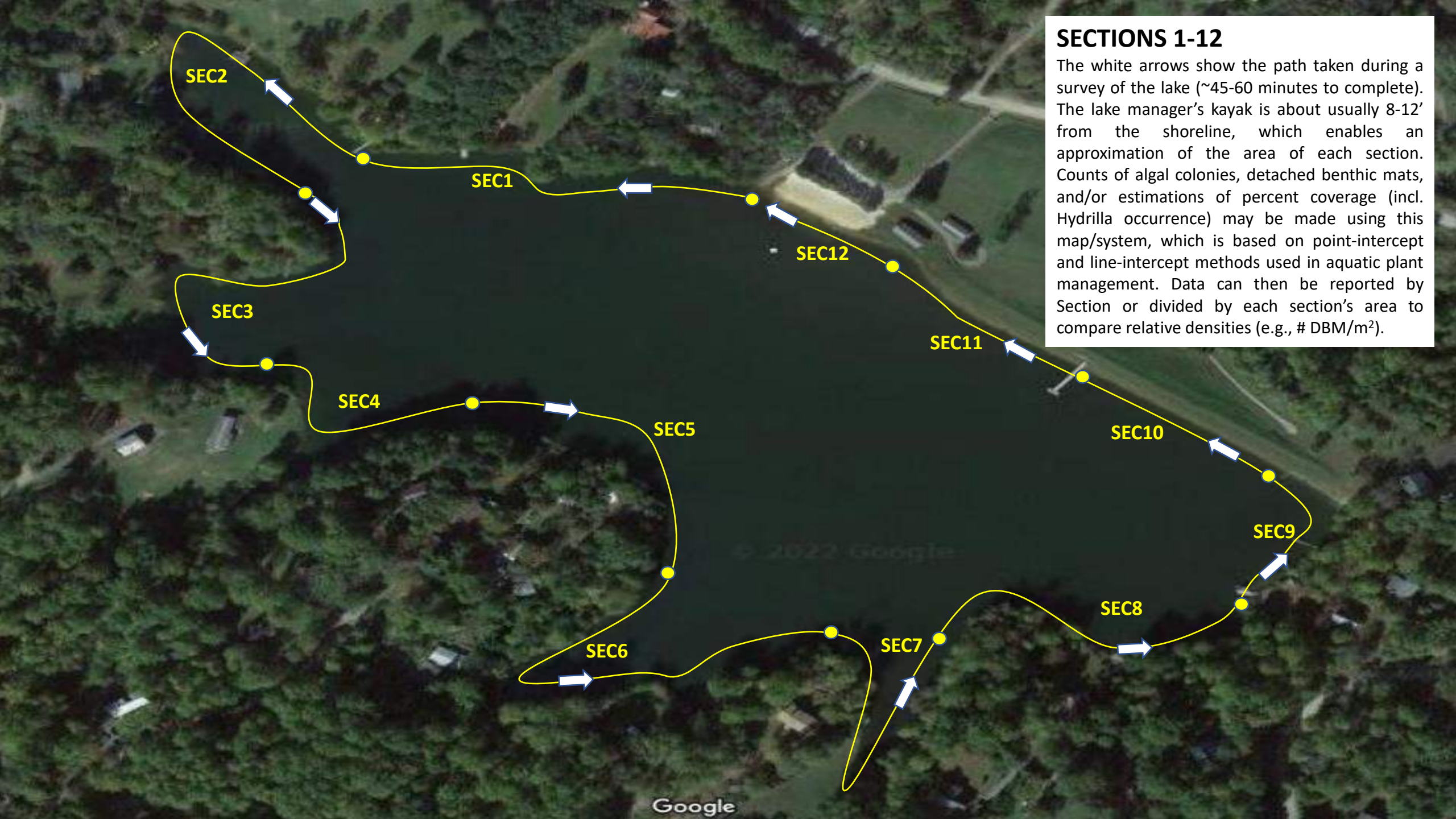
For water quality data, the lake is represented in two maps (see following slides). These maps have evolved and changed since 2020 in order to define (standardize) and describe sampling locations and compare data from various locations in the lake.


SITES 1-15
Each site is labeled A through F. "A" indicates shoreline (0') to 5', B = 15'; C=30'; D=45'; E=100' (swim platform); F=250'; G=350'. These are APPROXIMATE distances and can vary by Site.
13A
13.1A
13F
13.2A
14A
15A
1A3 (beach edge of boat launch; aligned with sign)
1A (beach)
1A2 (beach edge; aligned with sign)
14F
12A
2A
12F
1F
11/12G
1G
2F
3A
11F
11A
Greene Development Lake
10/11G
2G
3F
4A (pier)
10F
9.3A
3G
4F
5A
9.2A
4G
5F
6A (drain)
10A
5G
6F
6.1A
9.1A
6/7G
6.2A
8/9G
7F
7A
9F
8F
7.1A
9A
8A
Greene Acres Rd N
Greene Acres Rd S
Stephanie St
High View Rd
Sunrise View
Lisa Ln
Mallard Ln
Roberts Ln
Octonia Rd
Tall Pines Dr
637
Google
Satellite

This graphic shows the linear distance from the shoreline to the approximate midline transect of the lake

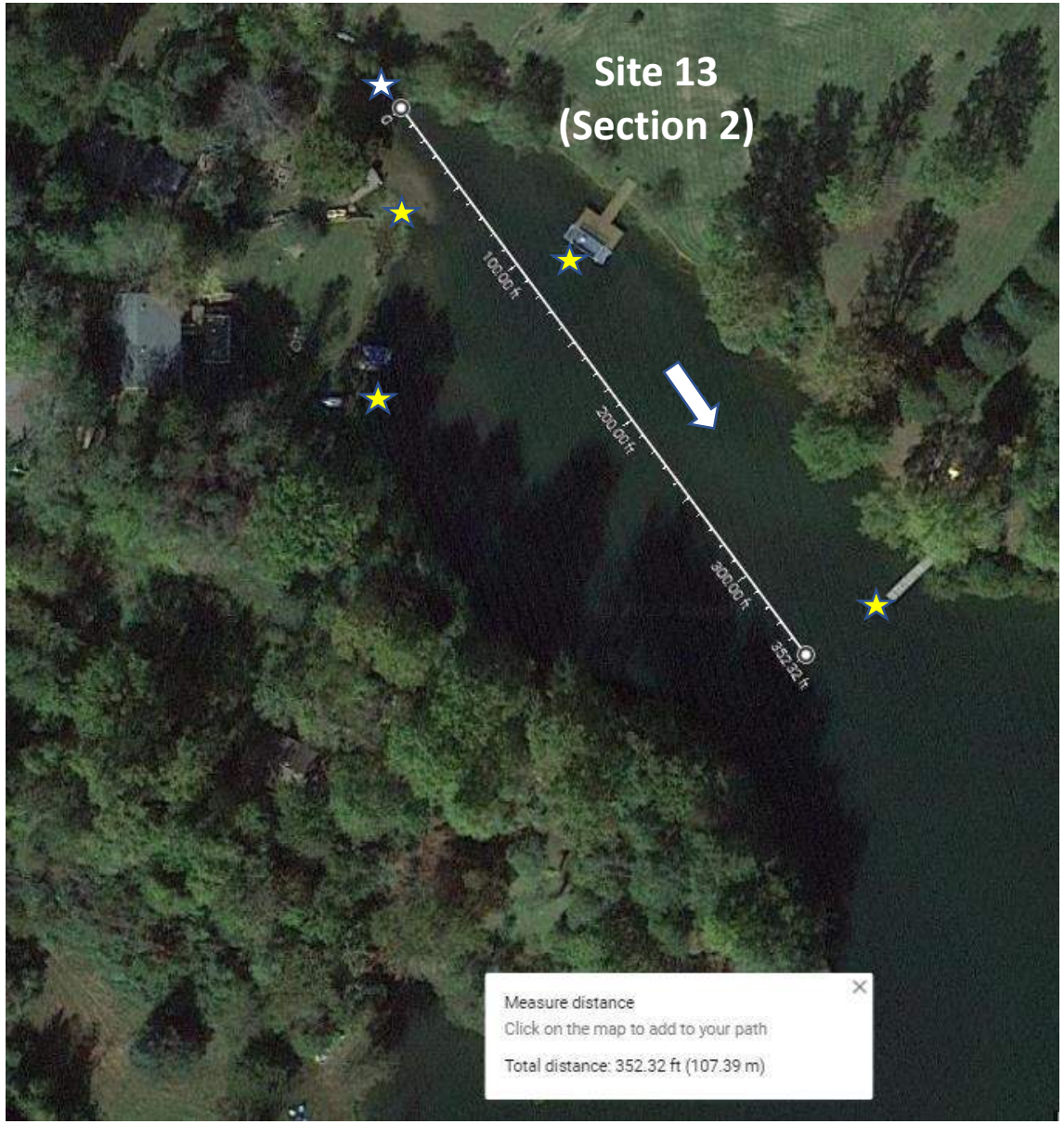


These graphics are examples of Sites 1A-1E and 4A-4E. If a sample is taken near the swimming platform, for example, the designation is “Site 1E.”



SECTIONS 1-12

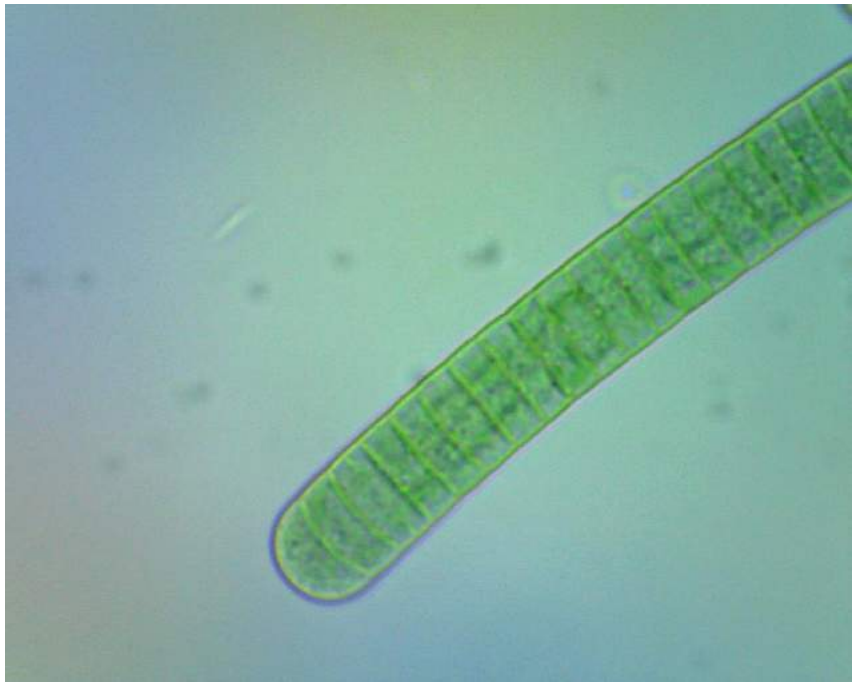
The white arrows show the path taken during a survey of the lake (~45-60 minutes to complete). The lake manager's kayak is about usually 8-12' from the shoreline, which enables an approximation of the area of each section. Counts of algal colonies, detached benthic mats, and/or estimations of percent coverage (incl. Hydrilla occurrence) may be made using this map/system, which is based on point-intercept and line-intercept methods used in aquatic plant management. Data can then be reported by Section or divided by each section's area to compare relative densities (e.g., # DBM/m^2).

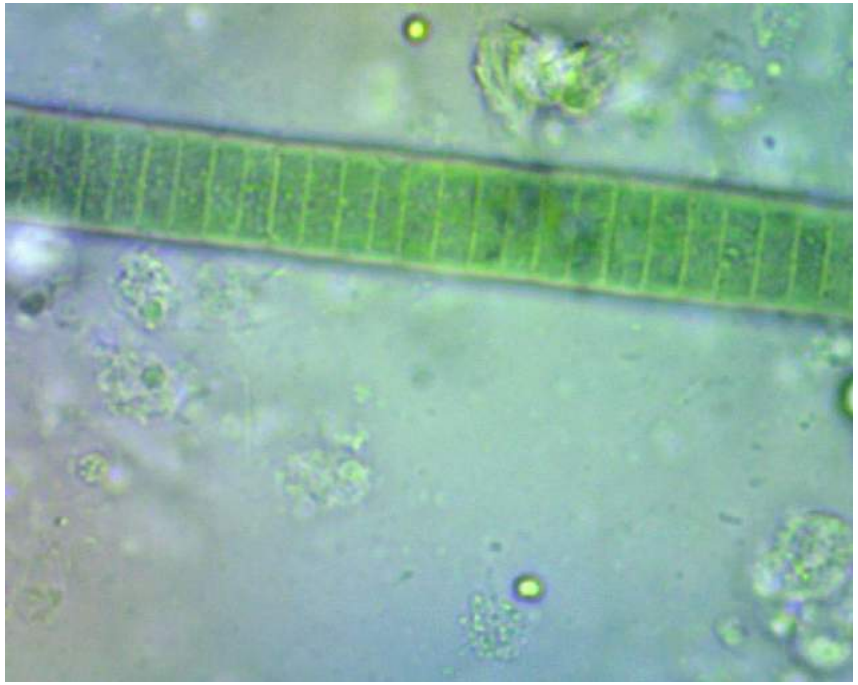


Site 13 (Section 2) is the second largest cove (~4450 m^2) of the lake.

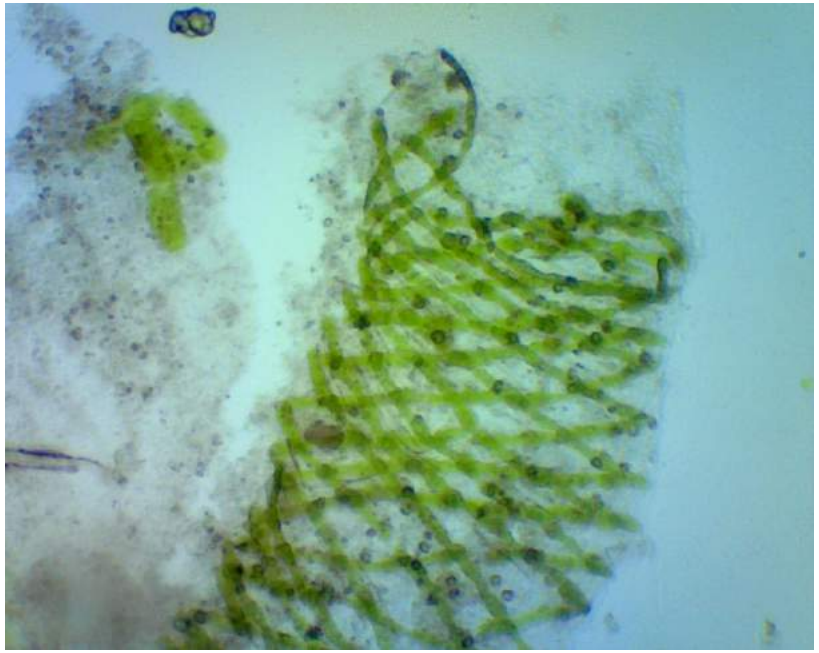
There is a net flow/current in the direction of the arrow (towards beach and then drain). This is a key location (others incl. the beach and the drain) in the lake, where runoff comes from one the largest ravines of the watershed (white star). Important locations within Site 13 are the docks (yellow stars); four (if incl. Weiss property) of the lake-front homes are located here. Most of the cove's depth is shallow (3 ft or less) with a 5-7' channel running in the midsection. Swimmers are frequently observed in this area of the lake.

The largest cove is Site 9 (Section 6) with an estimated area of ~5300 m^2 . Site 9 also has a large ravine, but Site 9 is heavily vegetated whereas Site 13 is not (as seen in satellite imagery) and there is typically less activity in Site 9 compared to Site 13. Swimmers have not ever been observed in this area of the lake.

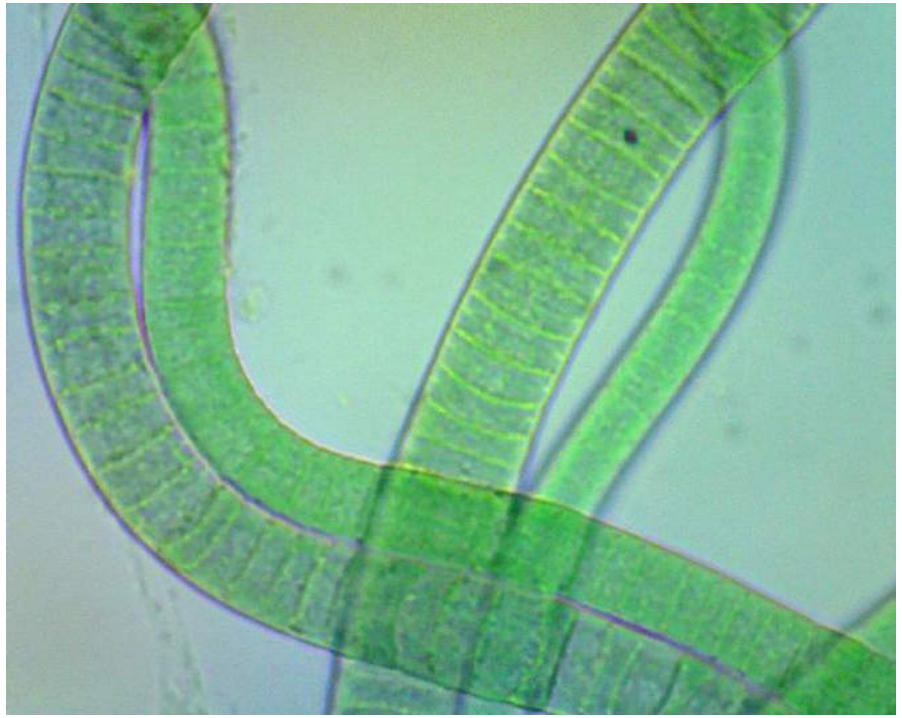


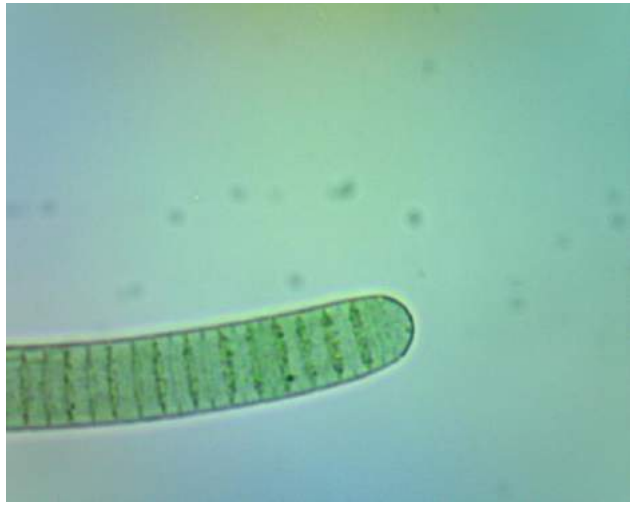


Date = 4-21-23
Location = Site 9.3A (Section 4)
≤2” diameter, gray/black/brown accumulations, assumed to be detached benthic mats loosened by increased Spring activity were observed and counted (#DBMs = 8) whereas no DBMs observed in other Sections on this date. The microscope images show filaments that are consistent in appearance with cyanobacteria; definitely *Oscillatoria* (see here and here); sheath present (indicating Microseira (aka Lyngbya)(?) and similar to isolates from 2022.

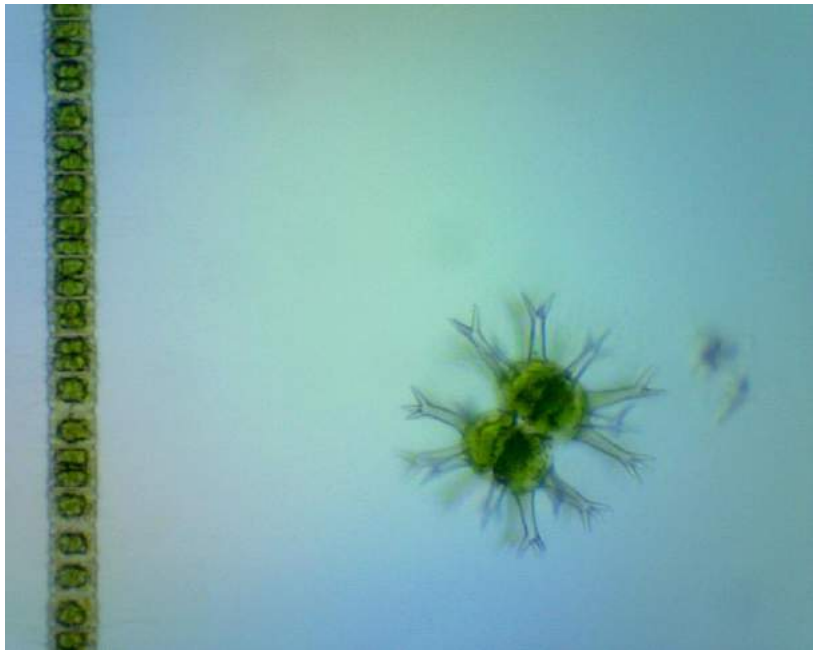


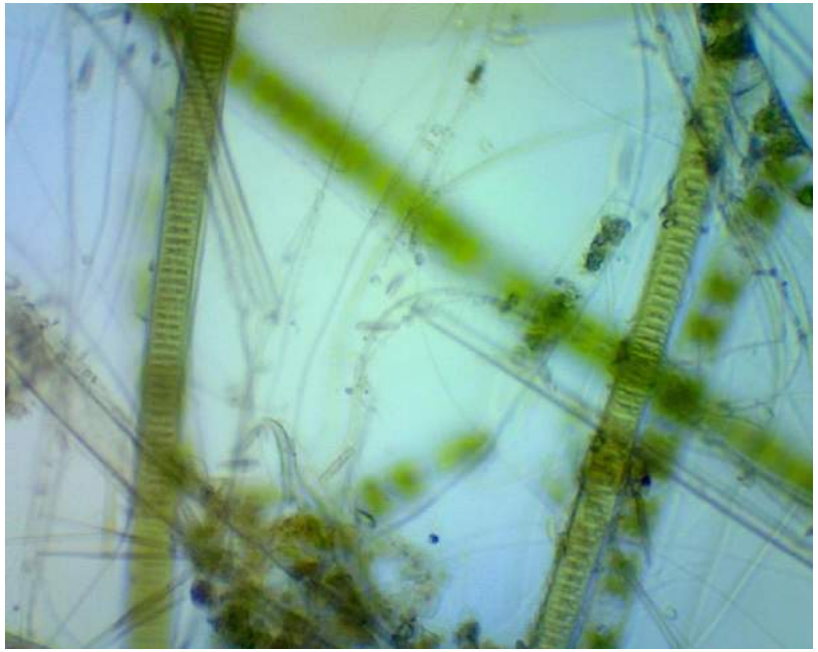
Date = 4-21-23
Location = Site 13A1 (Section 2)
Thought to be a species of green algae; further identification TBD.





Date = 5-25-23
Location = Site 9B (Section 5)
≤2” diameter, gray/black/brown accumulations, assumed detached benthic mats (DBMs) loosened by increased Spring activity (#DBMs = 3 in Section 5; there were 36 DBMs in Section 4). These filaments are consistent in appearance with cyanobacteria; definitely *Oscillatoria* (see here and here); sheath present (indicating Microseira (aka Lyngbya)?





Date = 6-1-23
Location = Site 6A (Section 10)
This sample was taken near the drain, along the shoreline, from surface material that resembles green filamentous algae (GFA).
The upper image shows two species; the cell on the right is a species of GFA called *Staurastrum* (and has been seen in 2022); the filament on the left is a species TBD but is thought to be a GFA.

The bottom image shows two strands / filaments consistent in appearance with cyanobacteria; definitely *Oscillatoria,* but as before more work needs to determine if there is a sheath present, which indicates Microseira. These filaments were the only ones observed in the entire slide preparation but shows the presence of cyanobacteria.