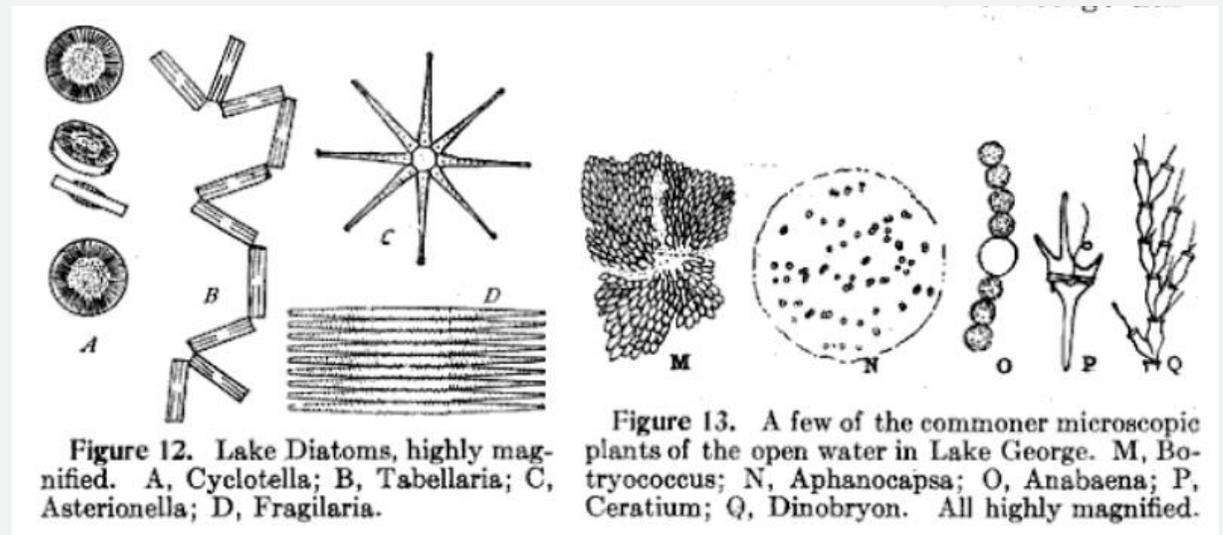


*CYANOBACTERIA,  
BLUE GREEN ALGAE &  
HARMFUL ALGAL  
BLOOMS (HABS)*

# *Blue Green Algae Are A Natural Occurrence*

- Interchangeable words: BG Algae and Cyanobacteria . Cyanobacteria being the more “correct” term.
- Natural part of the phytoplankton community in the 1922 Lake George survey
  - “Green and Blue green algae were present in relatively small numbers”
  - Aphanocapsa and Microcystis



Needham et al 1922

# Strong Seasonal Components

- Phytoplankton generally have a succession of the dominant forms throughout the Year:
  - Spring – Diatoms
  - Summer – Greens
  - Late Summer to Fall – Blue Greens
  - Winter – Cryptomonas

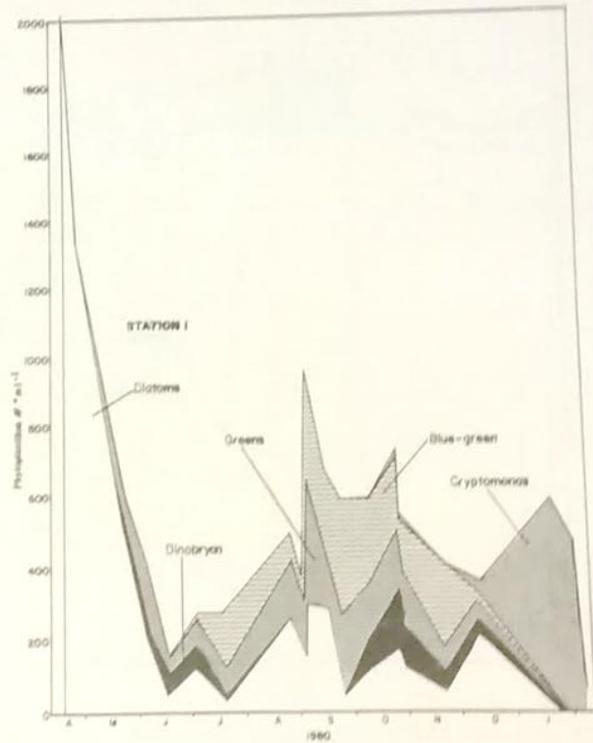
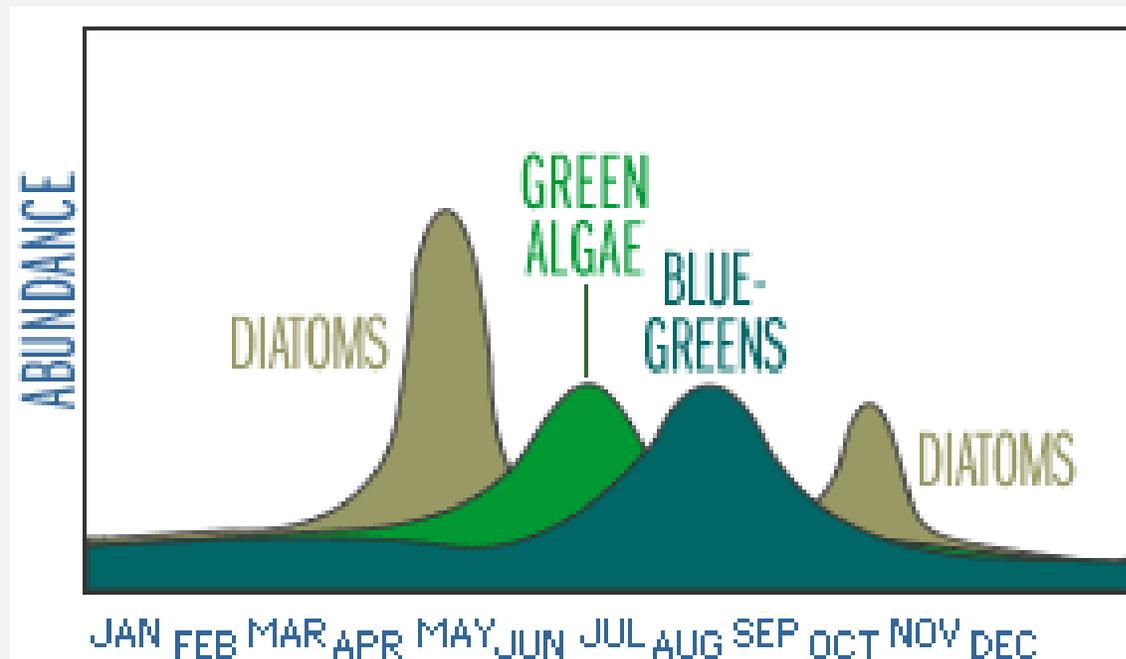


Figure 6. Phytoplankton numerical abundance at Station 1, Lake George, New York, April 1980 - February 1981.

Siegfried et al 1986



[Water on the Web](#)

# *Cyanobacteria Are In A Lake Already But What Is A HAB?*

- Harmful algal blooms (HABs), occur when colonies of algae — simple plants that live in the sea and freshwater — grow out of control and produce toxic or harmful effects on people, fish, shellfish, marine mammals and birds. The human illnesses caused by HABs, though rare, can be debilitating or even fatal. (NOAA)

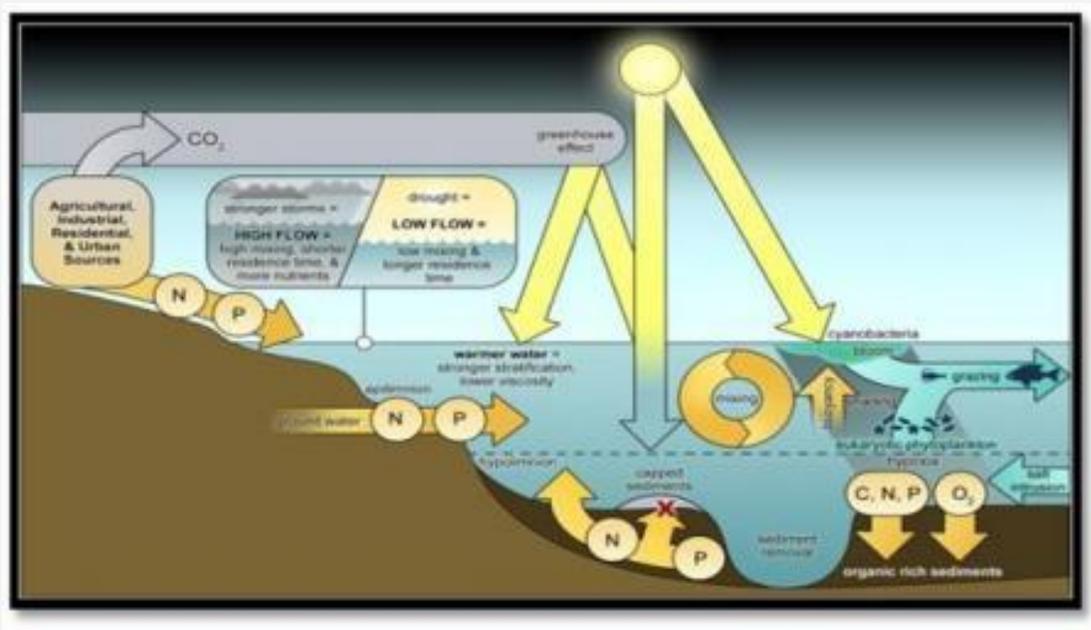


[Lake County General Health District](#)

[Michigan Radio](#)

# What Factors Cause HABs?

- HABs are likely triggered by a combination of water and environmental conditions that may include:
  - excess nutrients (phosphorus and nitrogen)
  - lots of sunlight
  - low-water or low-flow conditions
  - calm water
  - warm temperatures
- Depending on the weather and the characteristics of the lake, HABs may be short-lived (appearing and disappearing in hours) or long-lived (persisting for several weeks or more).



# *Areas to Improve In*

- What type of projects for remediation
  - Waste water treatment plant – Nitrogen only
  - Stormwater management – Nitrogen and Phosphorus
  - Septic management – Nitrogen and Phosphorus



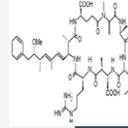
# *What A Bloom Looks Like...*



[https://youtu.be/HW\\_g7yfbfqo](https://youtu.be/HW_g7yfbfqo)

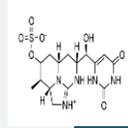
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# Not All Cyano's Are Capable Of Producing Toxins



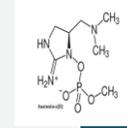
## Microcystis

- *Anabaena*
- *Fischerella*
- *Gloeotrichia*
- *Nodularia*
- *Nostoc*
- *Oscillatoria*
- *Microcystis*
- *Planktothrix*



## Cylindrospermopsin

- *Cylindrospermopsis raciborskii*
- *Aphanizomenon flos-aquae*
- *Aphanizomenon gracile*
- *Aphanizomenon ovalisporum*
- *Umezakia natans*
- *Anabaena bergii*
- *Anabaena lapponica*
- *Anabaena planctonica*
- *Lyngbya wollei*
- *Raphidiopsis curvata*
- *Raphidiopsis mediterranea*



## Anatoxins

- *Chrysochloris (Aphanizomenon) ovalisporum*
- *Cuspidothrix Cylindrospermopsis*
- *Cylindrospermum*
- *Dolichospermum*
- *Microcystis*
- *Oscillatoria*
- *Planktothrix*
- *Phormidium*
- *Anabaena flos-aquae*
- *A. lemmermannii*
- *Raphidiopsis mediterranea (Cylindrospermopsis raciborskii)*
- *Tychonema*
- *Woronichinia*

Going further, only certain strains of these will produce the toxins in certain conditions.  
And these conditions are not yet known.

# Reporting suspected HAB

July 5, 2020 | 9:15 am  
**Information on Novel Coronavirus** | Coronavirus is still active in New York. We have to be smart. Wear a mask and maintain 6 feet distance in public. | [GET THE FACTS >](#)

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Home » Chemical and Pollution Control » Water » Water Quality Monitoring & Assessment » Harmful Algal Blooms (HABs)

## Harmful Algal Blooms (HABs)

### Know it, AVOID it, Report it!

Because it is hard to tell a HAB from non-harmful algal blooms, it is best to avoid swimming, boating, otherwise recreating in, or drinking water with a bloom. Keep reading to learn what to do if you spot a bloom. Click on the links below for more detailed information.

#### Know it

Most algae are harmless and are an important part of the food web. Certain types of algae can grow quickly and form blooms, which can cover all or portions of a lake. Even large blooms are not necessarily harmful. However some species of algae can produce toxins that can be harmful to people and animals. Blooms of algal species that can produce toxins are referred to as harmful algal blooms (HABs).

HABs are likely triggered by a combination of water and environmental conditions that may include: excess nutrients (phosphorus and nitrogen), lots of sunlight, low-water or low-flow conditions, calm water, and warm temperatures. Depending on the weather and the characteristics of the lake, HABs may be short-lived (appearing and disappearing in hours) or long-lived (persisting for several weeks or more).

#### Avoid it

- People, pets and livestock should **avoid contact** with any floating mats, scums, or discolored water. Colors can include shades of green, blue-green, yellow, brown or red.
- **Never drink, prepare food, cook, or make ice with untreated surface water**, whether or not algae blooms are present. In addition to toxins, untreated surface water may contain bacteria, parasites, or viruses that could cause illness if consumed.
- People not on public water supplies **should not drink surface water during an algal bloom**, even if it is treated, because in-home treatments such as boiling, disinfecting water with chlorine or ultraviolet (UV), and water filtration units do not protect people from HABs toxins.

If contact occurs:

**Rinse thoroughly** with clean water to remove algae.

- Stop using water and **seek medical attention immediately** if symptoms such as vomiting, nausea, diarrhea, skin, eye or throat irritation, allergic reactions, or breathing difficulties occur after drinking or having contact with blooms or untreated surface water.

Be prepared:

Before you go in the water, find out what waterbodies have blooms or have had them in the past. DEC maintains a [HABs Notifications page](#) of waterbodies that currently have blooms. Please note that if a waterbody is not listed, it does not mean that it does not have a bloom. It may have one that was not reported. Find out what waterbodies have had blooms in the past on the [HABs Archive page](#). For additional information, please see the [DEC Program Guide \(PDF\)](#), updated in 2019.



*Algal blooms may have the appearance of spilled green paint.*

#### Important Links

- HAB Warning Sign (PDF)
- Harmful Algal Blooms and Marine Biotoxins
- HABs Brochure (PDF)

#### Links Leaving DEC's Website

- New York State Department of Health
- Environmental Protection Agency CyanoHABs

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9:17 AM  
7/6/2020

<https://www.dec.ny.gov/chemical/77118.html>



# *What is the SWCD doing for Water Quality?*

## *Monitoring and Sampling*

1. Warren County SWCD submitted 2 ARPA funding applications to Warren County:

Weather station set up at the SWCD office, collects solar radiation, precipitation, the conductivity of precipitation, wind (speed, gust, wind direction), temp (current, high, low), relative humidity, barometric pressure, vapor pressure.

Monitoring stations at Lake Sunnyside and Glen Lake, collects air temperature, relative humidity, barometric pressure, rainfall, water level, & water temperature

2. Conducts outfall inspection and sampling for outfalls in Glens Falls, Lake George and Queensbury for the Ms4 program. Assists other communities as requested with outfall sampling.
3. Private ponds
4. Glens Falls Water Supply

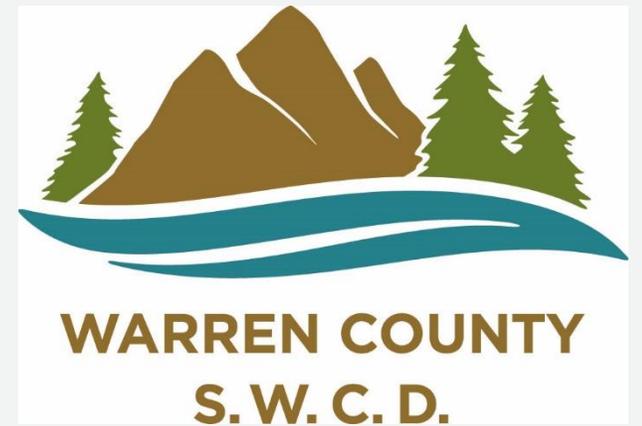
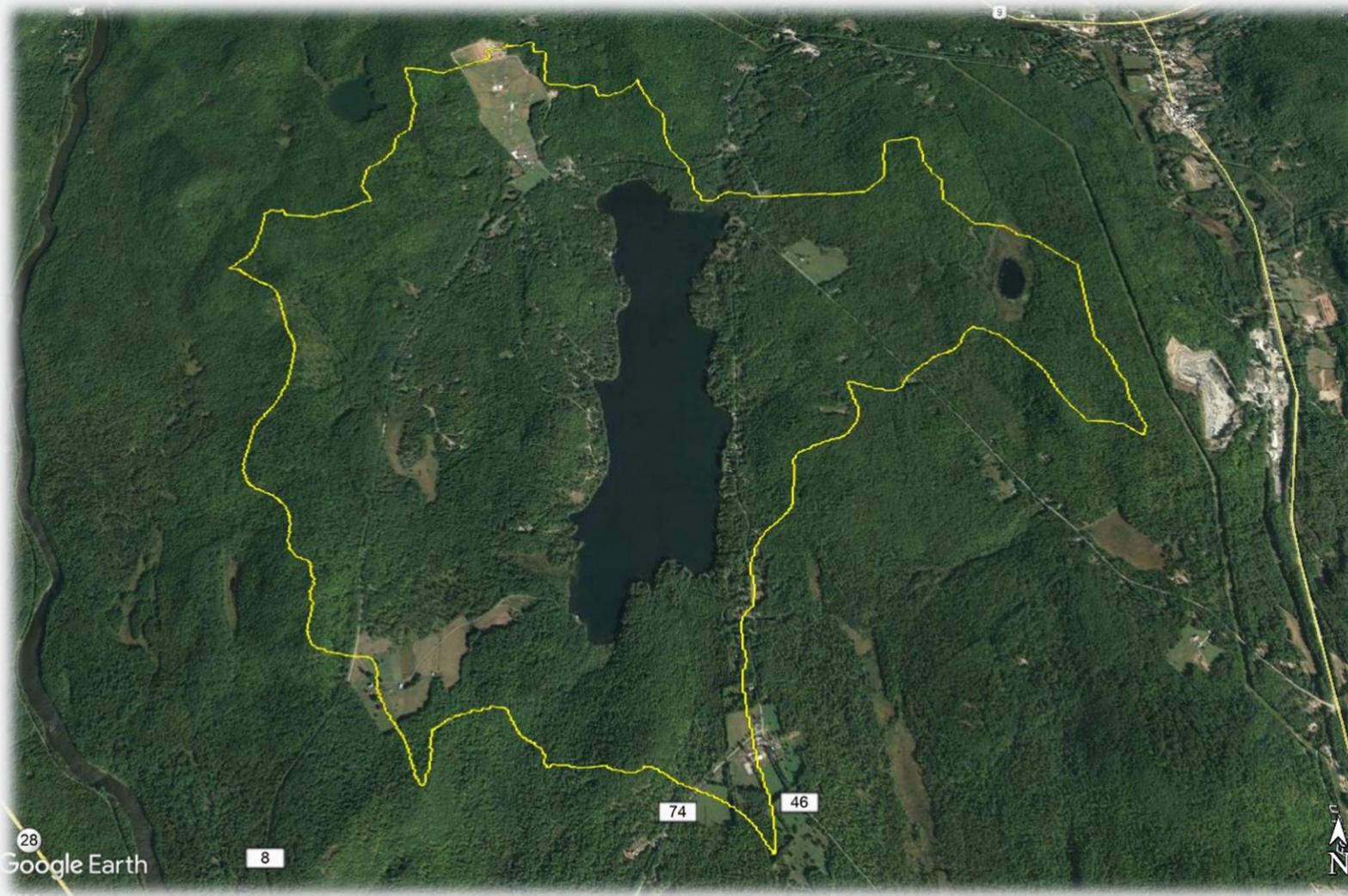
# *Planning and Implementation*



- Green infrastructure plans
- Traditional stormwater management
- Culvert assessments and plans
- Stormwater Assessments
  
- Implementation projects include stream culverts, stormwater reduction/improvement, hazard mitigation



# Questions?



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**Warren County SWCD**

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*Special thanks to Dr. Jeremy Farrell at RPI, for developing this presentation and allowing its use.*