Cayuga Lake HABs Volunteer Monitoring Information Packet - 2019

Dear Cayuga Lake HABs Harriers,

Thank you for volunteering to take part in the 2019 Cayuga Lake HABs Monitoring Program! Cyanobacteria blooms, commonly referred to as harmful algal blooms (HABs), pose a threat to Cayuga Lake. Some strains produce toxins that can cause sickness and potentially lead to death in people and pets. Cyanobacteria blooms have the potential to impair Cayuga Lake as a source of drinking water and a desirable place to live or spend a vacation. In 2018, the Cayuga Lake HABs Monitoring Program documented 40 cyanobacteria blooms on Cayuga lake, many of which were found to have toxin levels above limits set by the NYS Department of Health. This year, it is imperative that we continue to work together as a community to monitor HABs occurrence on Cayuga lake as closely as possible. *As a HABs Harrier, you will play a key role in protecting Cayuga Lake by helping us track, understand, and ultimately manage this emerging threat.*

*Harrier: [**har**-ee-er] **noun**, from the verb harry, to harass or attack repeatedly. Example: A Harrier Hawk attacks small game.*

Context and Objectives

Initiated in 2018, the Cayuga Lake HABs Monitoring Program is a joint effort led by a local consortium of three nonprofits: The Community Science Institute (CSI), the Cayuga Lake Watershed Network (CLWN), and Discover Cayuga Lake (DCL), working in collaboration with the New York State Department of Environmental Conservation (NYSDEC). The objective of this monitoring program is two-fold:

1. Maintain vigilant surveillance of the Cayuga Lake shoreline to observe and sample suspicious algal blooms so that users of the water in affected areas may be alerted to the potential threat the bloom may pose; and

2. Build a long-term HABs dataset that can help us understand where, and under what conditions, cyanobacteria most commonly bloom in Cayuga Lake. Establishing a robust dataset is the first step in effectively managing HABs.

Training Workshop

Before you can begin your harrying duties, you'll need to attend one of three workshops offered by NYSDEC. At the workshop, a NYSDEC staff member will explain what cyanobacteria are, how they are managed, and how to recognize and distinguish blooms of cyanobacteria from other types of algal blooms. You will also be provided with sampling instructions, kits for sample collection, and other helpful resources.

As part of the training workshop, immediately following NYSDEC's presentation, staff from our local CSI-CLWN-DCL consortium will consult with you to select your shoreline monitoring area (zone). We will also review essential program logistics including sample chain of custody and drop-off procedures.

Training Dates

Monday, June 10th
6:00 – 8:00 PM
Canoga Fire Hall, Seneca Falls, NY

Wednesday, June 12th
1:00 – 3:00 PM
Tompkins County Health Department, Ithaca, NY

Wednesday, June 12th
6:00 – 8:00 PM
Wells College, Aurora, NY

Survey Period and Frequency:

- Once a week, every week, July 8th – September 30th, 2019

The 2019 Cayuga Lake HABs monitoring season will start on Monday, July 8th and continue through the end of September. This survey period reflects the time frame when cyanobacteria blooms are most likely to occur. The Cayuga Lake HABs Hotline (habshotline@gmail.com or, alternatively, 607-257-6606 during normal business hours) will be open year round, in order to allow time to manage any issues that may arise or accept any suspicious bloom reports outside of the official HABs season.

Weekly Survey Schedule:

- Sunday, Monday, or Tuesday between 10:00 AM and 2:00 PM

Once a week, as a HABs Harrier, you'll walk, kayak, or boat along the length of your surveillance zone to look for evidence of cyanobacteria blooms. For help in recognizing suspicious blooms, you can refer to the pictures found within the Reference Materials section on page 7.

The survey can be done Sunday, Monday or Tuesday each week, preferably between the hours of 10 AM and 2 PM. Cyanobacteria blooms are most likely to be near, or at, the water's surface during direct midday sunlight.

We are providing a 3-day window for your shoreline survey because sometimes conditions are such (windy, rough water, or rainfall) that observing cyanobacteria blooms is unlikely and being on the water can be dangerous. If you plan on surveying on a Sunday and conditions are not right, move your day to Monday or Tuesday when conditions are more suitable for survey work. You may conduct additional surveys of your zone during the week. If you do so, you must submit a "No Bloom Report" for each survey.

The reason for this time frame is that any suspicious bloom sample needs to be cooled on ice immediately and delivered to the lab no later than the day following sample collection in order to meet the requirements for the certified method to test for microcystin.

How to Monitor for HABs

1. **Prepare** to survey your zone by making sure you have the following items with you:
    - **a.** Sample Kit: bottle, gloves, and "CSI Shoreline Survey Form/Chain of Custody"
        - **i.** *You will need these materials if you observe a bloom.
    - **b.** Camera or cell phone with camera
2. **Survey** the full length of your zone for one of two possible outcomes:
    - **a.** No blooms observed
    - **b.** Suspicious bloom observed
3. **Take the following actions** based on your observations:
    - **a. No Bloom –** file a "No Bloom Report" using the form available on CSI's website.
    - **b. Suspicious Bloom**
        - **i.** Take two pictures of the suspicious bloom: one close up to show bloom composition and one from far away to show bloom extent.
        - **ii.** Label the sample bottle with the following information: **sample collector's name, waterbody name, sample code, date, time.**
            1. If you are not able to determine the GPS coordinates, instead provide a street address or a physical landmark near the observed bloom.
        - **iii.** Carefully collect sample following NYSDEC protocol, being sure to wear gloves.
        - **iv.** Fill out the "CSI Shoreline Survey Form/Chain of Custody." Make sure information on the form matches the label on the sample bottle. Take a picture of the completed form.
        - **v.** Report the suspicious bloom on CSI's online "Report a HAB" form at www.communityscience.org. You must fill all of the required fields to submit the form online. Ensure that you have also attached the two photos of the suspicious bloom before submitting the form.

          OR

          Email pictures of the bloom and the "CSI Shoreline Survey Form/Chain of Custody" to habshotline@gmail.com immediately. The email's subject line should be formatted as follows: ***CYANOBACTERIA BLOOM PICTURES *zone#* *GPS coordinates/landmarks* *date* *time*** EXP. CYANOBACTERIA BLOOM PICTURES, zone 5, 42.6761 -76.7189, 8/23/18, 1330

iv. Store sample in a cool, dark place (preferably on ice or refrigerated) until you can deliver it **on ice**, along with the "CSI Shoreline Survey Form/Chain of Custody," to the CSI lab at 95 Brown Rd, Room 283, Ithaca, NY. If possible, the sample is to be delivered the same day it is collected, but no later than 4:00 PM the following day.

Sample Drop-off at CSI Lab

The Community Science Institute is located at 283 Langmuir Lab, 95 Brown Rd, Ithaca, NY and is open Monday – Friday, 9:00 AM – 5:00 PM. If possible, samples should be dropped off at the CSI lab between 9:00 AM and 4:00 PM on Monday. When you arrive, bring the sample up to room 283 where someone in the lab will accept it, complete the chain of custody, and provide you with a fresh sample kit.

If you are unable to transport the sample all the way to the CSI lab in Ithaca, there is a bloom relay system that may be used on an as-needed basis. This system uses two mid-way sample drop-off points, one in the Village of Aurora and the other in the town of Ovid. If you need to use this drop-off system to transport samples to the lab, please contact Nathaniel Launer at nathaniel.launer@communityscience.org or call the CSI lab at (607) 257-6606.

If you are unable to drop off a sample between 9:00 and 4:00 a weeday, an after-hours drop-off location is available in the back of Langmuir near the dumpsters (Figure 1). Deposit samples and completed "CSI Shoreline Survey Form/Chain of Custody" in the provided cooler inside the fenced structure. **Please be sure to fill out the chain of custody information at the bottom of the form.** This is the date and time that the sample was dropped off, not the date and time that the sample was collected.

If you happen to observe a suspicious cyanobacteria bloom at a time other than your regular survey time, either by chance or in response to a Hotline report, you can also drop off samples between 9:00 AM and 4:00 PM on any weekday. It may take longer for CSI to analyze the sample for microcystin toxin, depending on the lab's workload. Nevertheless the sample should be delivered to the CSI lab as soon as possible, but no later than the day following sample collection, in order to prevent deterioration and meet certified method requirements.

Figure 1) HABs sample drop-off location for the weekend and after normal business hours

Map to drop-off location: Follow the blue arrow to the drop-off location marked by the green star. The cooler will be inside the fenced structure (see right).

Fenced structure with cooler: The door to the structure will be unlocked. Please close the door after depositing the sample.

What happens to the samples?

CSI will analyze suspicious bloom samples for total chlorophyll a and visually assess samples for cyanobacteria using microscopy. CSI will also perform microcystin analyses (dependent on funding) using the certified EPA method 546.

Where are the results reported?

CSI will report all results as they become available from our lab, with the goal of reporting all results for suspicious blooms within 24-72 hours. Results will be posted on CSI's website at www.communityscience.org on CSI HABs Reporting Page including cyanobacteria taxa and total chlorophyll a and microcystin concentrations. CSI lab will be reporting all of the suspicious bloom reports and results from bloom sample analysis at CSI lab in Ithaca to the NYSDEC on a weekly basis. This HABs data from Cayuga Lake will be used on the NYSDEC's NYHABs state-wide HABs reporting database. The link for the NYHABs reporting database is:

https://nysdec.maps.arcgis.com/apps/webappviewer/index.html?id=ae91142c812a4ab997ba739ed9723e6e

In addition, the CSI-CLWN-DCL consortium will email results as well as weekly survey reminders to HABs Harriers. The consortium will also notify regional Health Departments, local stakeholders, and the general public via E-blasts, press releases, and social media with the recent reports of suspicious bloom and the results of suspicious bloom sample analysis as they become available.

Reference Materials and Contact Information

The process described in this document is presented as a flowchart in Attachment A. Please take a moment to look at the flowchart, identify your activities as a volunteer (in green boxes), and note how they are critical to the entire process of monitoring HABs on Cayuga Lake.

HABs Harriers will receive a copy of NYSDEC's HABs Volunteer Guide at their training session. This guide has excellent photos of HABs that you can use as a reference to help you identify suspicious algal blooms.

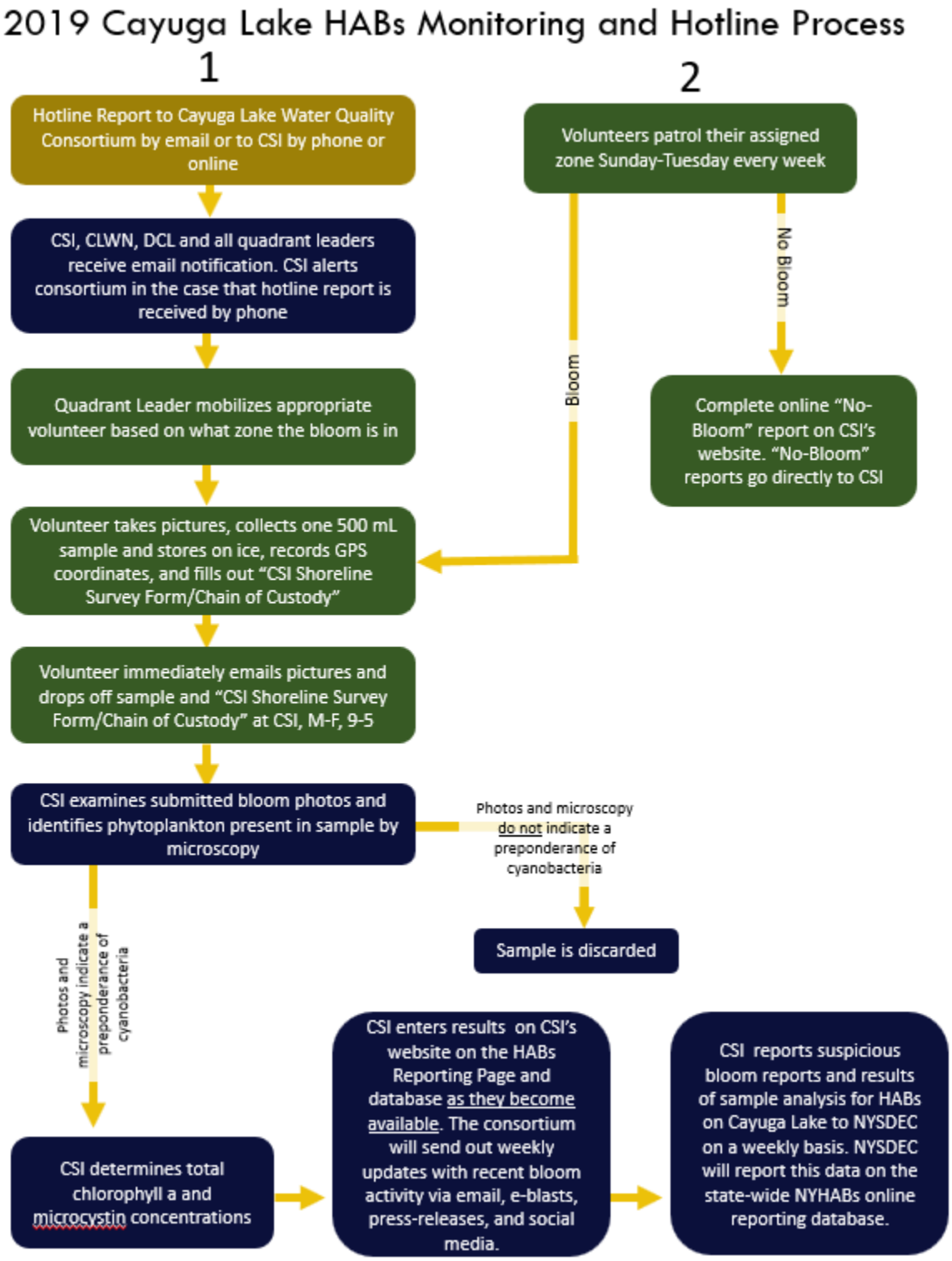
The NYSDEC maintains an excellent website at: http://www.dec.ny.gov/chemical/77118.html that can be referred to for additional information.

Please don't hesitate to contact your local HABs consortium if you have any questions!

Community Science Institute
Outreach Coordinator, Cayuga Lake HABs Monitoring Program Coordinator – Nathaniel Launer, nathaniel.launer@communityscience.org

Cayuga Lake Watershed Network
Programs Manager – Jennifer Tufano, programs@cayugalake.org

Attachment A: 2019 Cayuga Lake HABs Monitoring Flowchart



HABs may look like parallel streaks, usually green, on the water surface.

HABs may look like green dots, clumps, or globs on the water surface.

HABs may look like blue, green, or white spilled paint on the water surface.

HABs may make the water look bright green or like pea soup.

Attachment C: Picture of what a Cayuga Lake "No Bloom" report looks like online

(A link that will give you access to this Google form will be provided in the coming weeks. Access to this form can also be found on CSI's website under the tab "Harmful Algal Bloom Monitoring")

Cayuga Lake No-Bloom Report

Complete this form following weekly shoreline survey only if no bloom is observed.

* Required

Name of HABs Harrier *

Your answer

Waterbody Name *

Your answer

Zone Number *

Your answer

Date the Zone Survey was Completed *

Date

mm/dd/yyyy

Time the Zone Survey was Completed *

Time

: AM

Observations

Your answer

SUBMIT

Never submit passwords through Google Forms.

Volunteer

Suspicious Cyanobacteria Bloom Sample Tracking Sheet

Bloom Code: _____

Cayuga Lake Shoreline Survey Form and Certified Lab Chain of Custody

Suspicious Bloom Sampling and Tracking Procedure

1. Take at least two pictures of bloom: one close-up to show bloom detail and one from far away to show bloom extent. 2. Report bloom on CSI's website at www.communityscience.org **OR** email pictures, GPS Coordinates, location description, date and time of observation to habshotline@gmail.com.
3. Collect sample in the provided glass sampling container. Wear Gloves! Fill out the label with sample collector's name, zone number, date, and time sampled.
4. Complete this chain-of-custody document for each sample. Information must match the information on the corresponding sample bottle *and* photos.

Name of person who collected bloom sample: _____ **Email:** _____

Name of person who observed bloom (if different): _____ **Email:** _____

Cayuga Lake quadrant and zone number where bloom was collected: _____

Exact Location of Bloom

1.) GPS Coordinates **Latitude:**_____ **Longitude:**_____

2.) Nearest Address _____

3.) Location Description _____

Date that suspicious bloom sample was collected: _____ **Time that suspicious bloom sample was collected:** _____

Date that suspicious bloom was observed: _____ **Time that suspicious bloom was observed:** _____

Bloom Extent (See back for descriptions):

- ☐ Small Localized (few properties)
- ☐ Large Localized (many properties)
- ☐ Widespread

☐ Bloom has been reported on CSI's website at www.communityscience.org

OR

☐ Pictures, date, time, GPS location, collector's name, and zone number have been emailed to habshotline@gmail.com

Sample Preservation for toxin testing (check all that apply) ☐ On ice ☐ If no ice is available, drive to CSI lab immediately to prevent deterioration ☐ Refrigerate if sample is collected after business hours

Chain of Custody Documentation

	Date	Time	Relinquished By	Accepted By	# Containers	Temp. Upon Receipt
1.	_____	_____	_____	_____	_____	_____
2.	_____	_____	_____	_____	_____	_____

Bloom Extent Determination Descriptions (NYSDEC)

Small Localized: Bloom affects a small area of the waterbody, limited from one to several neighboring properties.

Large Localized: Bloom affects many properties within an entire cove, along a large segment of shoreline, or in a specific region of the waterbody.

Widespread: Bloom affects the entire waterbody, a large portion of the lake, or most to all of the shoreline.

Go to www.communityscience.org or www.database.communityscience.org
to see test results and confirmed bloom locations

Attachment E: Picture of the CSI's online suspicious bloom reporting form

(This form can be access on CSI's website at www.communityscience.org under the tab "Harmful Algal Bloom Monitoring. All required fields must be filled out and pictures must be attached to submit the report.