Lower Hudson River Harmful Algal Bloom Monitoring 2025

In mid-August, DEC confirmed a New York Harmful Algal Bloom System (NYHABS) report of a Harmful Algal Bloom (HAB) for the Hudson River. The DEC has received additional HAB reports on the Hudson River this summer through the end of August, into late September, and additional sparse reports in early October.

While HABs are commonly reported in flowing waters across the state, in collaboration with investigators at Stony Brook University (SBU), DEC developed a survey of the blooms on the Hudson River to better understand densities, what cyanobacteria were present, which toxins, if any, are being produced, ambient nutrient concentrations, and the spatial extent of the blooms. The collaborative DEC-SBU effort monitored the Lower Hudson River between Hudson and Newburg, NY (~60 miles) on September 23 and 24th of 2025 to characterize conditions. Discrete water samples were collected at three-mile intervals and high-frequency (1-minute) measurements of water quality were collected throughout the full extent of the survey area.

Discrete Water Sample Parameters

- Microcystin
- Flouroprobe Blue-Green Chlorophyll-a
- Phytoplankton
- rRNA
- Non-microcystin cyanotoxins
- Ammonium
- Nitrogen
- Phosphorus
- Orthophosphate

High-Frequency Measurements

- Temperature
- Dissolved Oxygen
- pH
- Salinity
- Chlorophyll-a
- Phycocyanin

Preliminary results indicate that algal concentrations throughout the section of river monitored are low (<10 µg/L) (Figure 1). The highest measures of blue-green chlorophyll, a parameter indicative of cyanobacteria, (4.9 - 9.4 µg/L) were observed in the area around Kingston, NY (Figure 2). Moderate risk of acute health effects from cyanobacteria recreational exposure are expected above 25 µg/L blue-green algae chlorophyll (NYSDEC 2025), whereas values below that threshold are considered low risk of acute health effects. Additional samples were collected and analyzed for algal concentrations in Esopus and Roundout Creek. While still below the 25 µg/L threshold, concentrations at these locations were variable with blue-green chlorophyll measuring 3.7 µg/L in Esopus Creek and 21.7 µg/L in Roundout Creek.

Despite low concentrations in the open river, many of the confirmed bloom reports on the Hudson River were of denser, shoreline accumulations of cyanobacteria. These reports provide important information to DEC and NYS Department of Health (DOH) about the occurrence of HABs. DEC and DOH recommend avoiding contact with any discolored water or algal scums on the water and if members of the public suspect a HAB, report it through the NYHABS online Suspicious Algal Bloom Report Form. DEC and DOH coordinate closely to ensure protection of recreation and drinking water supplies.

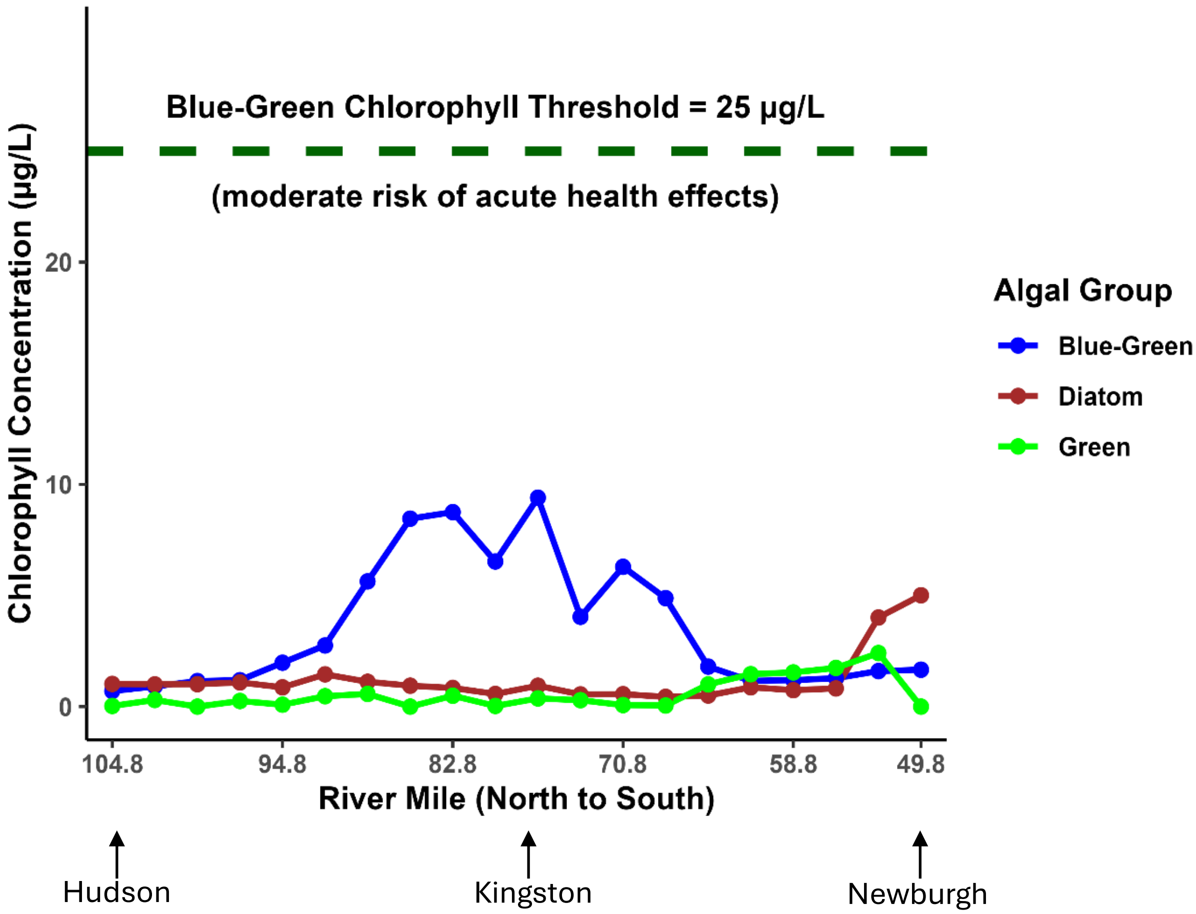

Figure 1: Fluoroprobe results from discrete samples collected on the Hudson River in 2025. Results indicate elevated concentrations in an area around Kingston, New York. All observations in the Hudson River are below the New York State HAB threshold for blue-green algae of 25 ug/L. Values above this threshold indicate the presence of a bloom and a moderate risk of acute health effects from cyanobacteria recreational exposure.

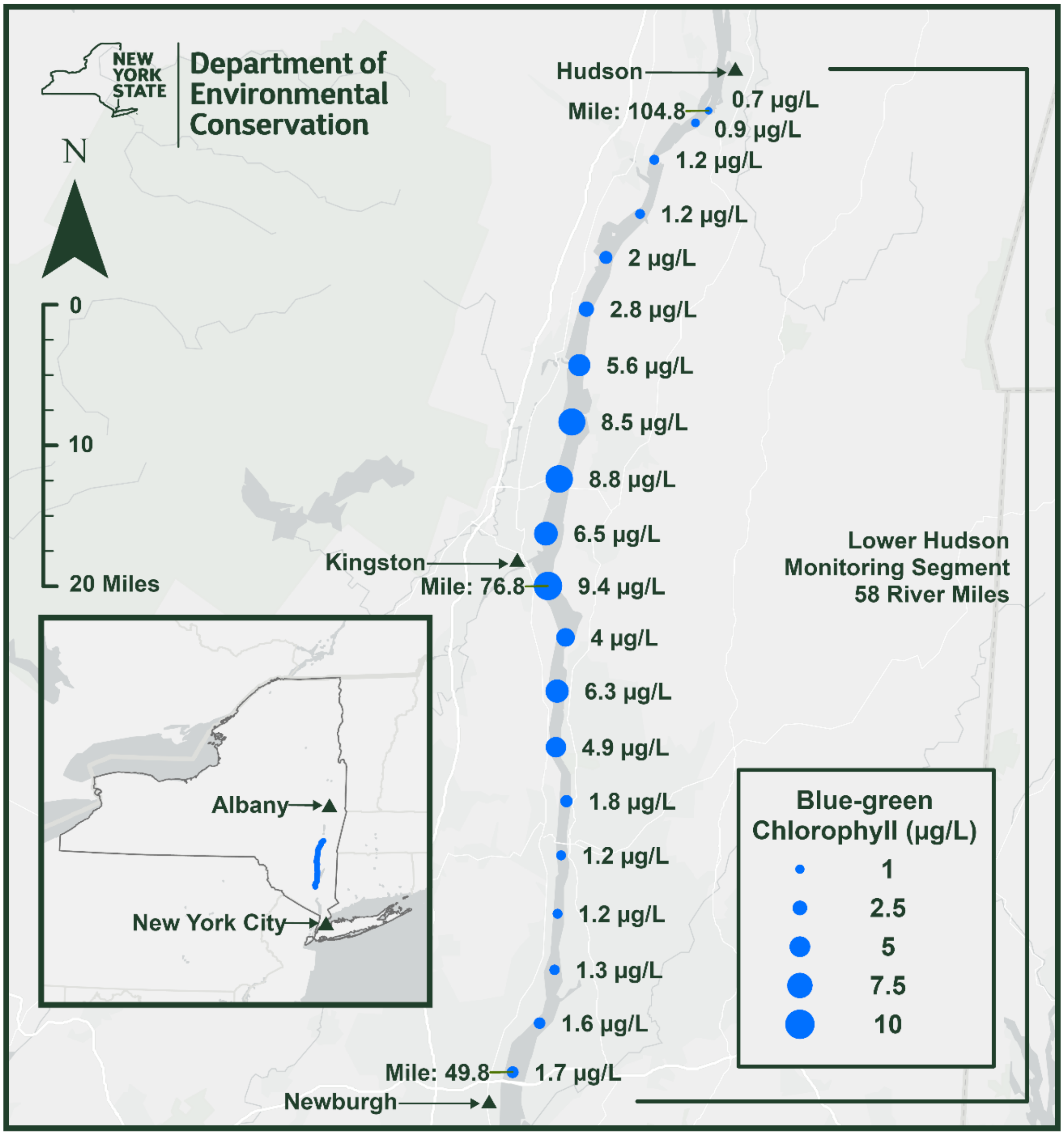

Figure 2: Map of blue-green chlorophyll results in the Hudson River Monitoring Segment. Discrete samples were collected at three-mile intervals within the survey area and analyzed using a fluoroprobe chlorophyll method (Bbe Moldae nke, 2014). Results indicate elevated concentrations in an area around Kingston, New York. All observations in the Hudson River are below the New York State HAB threshold for blue-green algae of 25 ug/L. Values above this threshold indicate the presence of a bloom and a moderate risk of acute health effects from cyanobacteria recreational exposure.