



2024 Clean, Safe Beaches Proposal

Improving Beach Safety Through Enhanced Monitoring and Outreach

Background:

This 2024 *Clean, Safe Beaches* Proposal was prepared largely in response to recommendations released through the Yahara CLEAN Compact's publication titled *RENEW THE BLUE: A Community Guide for Cleaner Lakes & Beaches in the Yahara Watershed* (May 2023). The publication set forth top-priority actions that include increased testing at public beaches.

Page 26: "Public Health Madison and Dane County monitors beaches for E. coli and cyanobacteria toxins, and closes beaches if concentrations exceed safety limits. This monitoring is most useful for providing warnings to the public, although these warnings are often delayed because of staffing limitations."

Page 37: "Low-income respondents were the only ones to list swimming as a top five activity (44%) and BIPOC cited hanging out at the beach as a top five activity (48%). Key finding: Ensuring that beaches are safe and welcoming for BIPOC is an equity issue."

Page 66: "G-12: Increase and improve the frequency and targeting of E. coli testing and reporting at problem public beaches with frequent closures... Overview: Increased testing frequency, especially at beaches that have historically had recurring closures due to E. coli, will provide a better understanding of the locations, timing, and contributing conditions of high E. coli. In addition, more frequent testing of our public beaches will yield valuable information that can be used by testing entities like Public Health Madison and Dane County to identify and target those at-risk beaches warranting the greatest attention. The resulting information can also help: 1) guide the execution of E. coli-control efforts where they are needed most; 2) make the public more aware of conditions as they evolve; and 3) better protect public health and people's confidence in the safety of our beaches. It is recommended that closure status continue to be communicated to the public via government website, email notices to subscribers, and the Clean Lakes Alliance LakeForecast app."

The following Statement of Support was unanimously adopted by Clean Lakes Alliance's Community Board on September 19, 2023: *"We, the Clean Lakes Alliance Community Board, support the proposed Clean, Safe Beaches pilot project in partnership with PHMDC with the goal of increasing the speed and frequency of testing and public-information sharing."*

Opportunity:

Depending on how you count them, there are between 22 and 28 public beaches and swim areas located on the Yahara chain of lakes. Most of these beaches receive at least once-per-week testing by Public Health Madison & Dane County (PHMDC) for the purpose of protecting public health and safety. However, the timing and frequency of testing is dependent on limited staff availability. This can create situations when testing decisions are made irrespective of prevailing risk levels. Additionally, when testing results prompt a beach closure, there is a delay between when the decision is made and when hand-posted warning signs can be put in place. The time-delay gap increases if sampling protocols are used that rely on slower, lab-based analytical methods.

By integrating a trained volunteer monitoring network, rapid testing methods, the LakeForecast communication platform, and remotely activated beach signage, the above-described concerns can be eliminated while being more protective of public health. In recent years, County budget requests to improve the frequency and targeting of beach testing have been put forward by both Clean Lakes Alliance and the Dane County Lakes & Watershed Commission. The Commission's draft 2024 budget recommendation includes aspects outlined in this proposal:

“Expanded Beach Health Monitoring, Education and Public Notification. Public Health Madison and Dane County (PHMDC) monitors our lakes and shoreline waters for high levels of pathogenic bacteria (*E. coli* and *Salmonella*) and blue green algae (*Cyanobacteria*) so that beaches can be closed when unsafe levels of these organisms are present. Cyanobacteria produce multiple toxins which are highly toxic to humans and pets. *E. coli* and *Salmonella* cause intestinal infections which vary from very mild to life threatening. Children and the elderly are especially vulnerable. Cyanobacteria are naturally present in the water and soil. *E. coli* and *Salmonella* enter our streams and lakes through runoff containing animal waste. These outbreaks occur as a result of heavy rainfall or high temperatures and require more frequent sampling to ensure that the public is properly notified. ***The LWC recommends that the county (either alone or in partnership with appropriate municipalities) allocate additional funding for staff to increase the frequency of sampling required by rapidly changing weather patterns (i.e. both temperature and precipitation) and the processing of these samples. Equally important is rapid publication of PHMDC health advisories about water quality risks (directed at the general public and lake users outside of beaches. i.e., anglers and boaters). This can be achieved by purchase and installation of ELECTRONIC message boards which can be updated by computers as soon as samples are processed.***”

Pilot Project Overview:

We propose a partnership between PHMDC and Clean Lakes Alliance to pilot a beach-safety initiative in 2024. Focusing on 2-4 selected beaches managed by county and city government, the proposed pilot would utilize a combination of remotely activated electronic signage systems; rapid testing methods for measuring cyanobacteria toxicity and *E. coli* concentrations; and trained “citizen scientists” from Clean Lakes Alliance’s LakeForecast nearshore monitoring network. Recommended pilot locations would include at least one County-owned beach (i.e., Goodland on Lake Waubesa) and at least one city-owned beach (i.e., Spring Harbor on Lake Mendota, BB Clarke on Lake Monona, or Vilas on Lake Wingra). Through a collaboration between PHMDC and Clean Lakes Alliance-directed volunteer monitors, more real-time testing

outcomes would be communicated to the public using both the LakeForecast.org website and free app and the new electronic signage systems.

Objectives:

- **Improved Public Health:** The use of trained volunteer monitors to increase the speed and frequency of beach testing enhances the safety of beachgoers, namely by providing timely and accurate information about ever-changing water quality conditions.
- **Volunteer Engagement:** Enlisting the services of a trained volunteer monitoring network to foster community involvement and awareness, increase testing frequency, and produce overall cost savings through reduced staffing expenses.
- **Remotely Activated Signage:** Electronic signs that can be remotely activated and updated to inform the public when it is safe to swim and when there are potential risks due to high *E. coli* bacteria levels or cyanobacteria toxins. Signs are solid fixtures that are less prone to theft or manipulation and can be run on solar power. They can also provide information to the public in multiple languages.
- **Real-time Information:** Integration with LakeForecast.org and the free app to offer beachgoers access to up-to-date water quality forecasts and advisories.

Implementation Steps:

1. **Rapid Testing Methods:** Strip-test kits (1-hr turnaround for microcystin toxicity) and QPCR methods (2-4-hr turnaround for *E. coli* sample analysis, rather than the more typical 18-24 hours that often results in a closure a day after the beach should have been closed) provide quicker results, allowing more timely responses to potential risks. Strip test kits will be ordered, and participating volunteers will receive training on their effective use and how to properly communicate results to PHMDC for verification and potential action. This might be done, for example, by texting photos of rapid strip test results to designated PHMDC staff. Conversely, QPCR methods for *E. coli* will be performed in the lab by trained PHMDC staff. The faster turnaround allows testing on Fridays without needing to staff the lab on the weekends.
2. **Volunteer Recruitment and Training:** Clean Lakes Alliance will recruit active volunteers from its LakeForecast monitoring network to supplement the work of PHMDC seasonal staff. PHMDC staff will provide additional training to LakeForecast volunteers on proper sample collection, testing and quality-assurance procedures, and safety protocols. One or more volunteers will be assigned to each beach involved in the pilot.
3. **Testing Schedule:** Clean Lakes Alliance and PHMDC will establish a testing schedule for each pilot beach. The testing schedule will consider factors such as desired weekly

frequency, time of day, and the role that weather events might play at beaches impacted by storm runoff.

4. **Electronic Signage:** Remotely activated signs will be purchased and installed at each pilot beach to display more real-time water quality information to the public. What is displayed on the signs, like those used by Door County and the cities of Racine and Oshkosh, will change based on testing results and the status of any advisories.

5. **Integration with LakeForecast.org:** The LakeForecast.org website and mobile app currently display beach closures by scraping information disseminated through the PHMDC website. This platform can continue to be used to provide the public with easy, uninterrupted access to this important information.

6. **Data Collection and Analysis:** Testing data within the pilot period will be compiled and tracked by PHMDC and shared with Clean Lakes Alliance. Trends and patterns will then be analyzed and can potentially be used to identify the timing and potential sources of contamination.

7. **Public Awareness and Education:** Clean Lakes Alliance and PHMDC will collaborate on a multi-media awareness campaign to educate the public about water quality, how to stay safe at the beach, and the initiative’s purpose and benefits.

Budget (based on 4 days/week sampling for 13 weeks):

Expense Category	Pilot cost with 1 beach	Pilot cost for 2 beaches	Pilot cost for 3 beaches	Pilot cost for 4 beaches
Rapid tests – QPCR (E. coli) - \$30/test	\$1,560	\$3,120	\$4,680	\$6,240
Rapid tests – strip (microcystin) - \$30/test	\$1,560	\$3,120	\$4,680	\$6,240
Electronic signage (based on reported Door County purchase cost for SwimSafe units)	\$6,000 (+\$400 annually)	\$12,000 (+\$800 annually)	\$18,000 (+\$1,200 annually)	\$24,000 (+\$1,600 annually)
Solar-power upgrade for electronic signage	\$3,000	\$6,000	\$9,000	\$12,000
1 PHMDC intern (based on 40 hrs/wk for 13 weeks @ \$26/hr current rate)	\$13,520	\$13,520	\$13,520	\$13,520
Clean Lakes Alliance training & coordination of volunteers to perform the testing*	\$2,500	\$2,500	\$2,500	\$2,500

Implementation of public awareness campaign*	\$9,000	\$9,000	\$9,000	\$9,000
Clean Lakes Alliance data analysis*	\$1,500	\$1,500	\$1,500	\$1,500
TOTAL:	\$38,640 (+\$400 annually for the electronic sign)	\$50,760 (+\$800 annually for 2 electronic signs)	\$62,880 (+\$1,200 annually for 3 electronic signs)	\$75,000 (+\$1,600 annually for 4 electronic signs)

*Fixed Clean Lakes Alliance costs regardless of number of pilot beaches

Benefits:

- More frequent water quality testing to improve the safety of beachgoers
- Faster communication of testing results to the public
- More prominent signage that is easier to see and interpret
- Increased community engagement and volunteer participation
- Reduced burden on PHMDC staff
- Data-driven decision-making for improved beach management

By utilizing advanced testing methods, engaging volunteers, implementing phone-activated signage, and leveraging the LakeForecast outreach platform, this budget proposal aims to significantly enhance the public’s health, safety and awareness when using area beaches.