



Wisconsin's Great Lakes Beach Monitoring & Notification Program 2023 Beach Season Summary



**Office of Great Waters
Wisconsin Department of Natural Resources
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Thanks to everyone who helps make Wisconsin's Great Lakes Beach Program a success!

County participants include:

Ashland County Health and Human Services
Bayfield County Health Department
Brown County Health and Human Services
City of Milwaukee Health Department
City of Oak Creek Health Department
Door County Health and Human Services
Douglas County Health and Human Services
Iron County Health Department
Kenosha County Division of Health

Kewaunee County Public Health Department
Manitowoc County Health Department
North Shore/Shorewood Health Department
City of Racine Public Health Department
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“Big Red Rainbow” by Donna Feuerstein

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2023 Beach Season: Program Highlights

Wisconsin's Great Lakes Beach Monitoring & Notification Program has operated since 2002, making the summer of 2023 its 21st season.

Each year, the beach program collaborates with local stakeholders to evaluate the beach list for accuracy and prioritize beaches for monitoring. The beach list is posted on the DNR website with specific notes of program changes. This includes the following:

- Are there coastal beaches missing from the list (e.g. new parks with beach areas)?
- Are the beach location and measurements correct?
- Have conditions surrounding the beach changed (e.g. restoration, drainage, water levels)?
- How is the water quality? Do we have historical data?
- How many people use the beach? What do local people call (name) the beach?
- Are nowcasts or other same-day tools in place to improve the timing for posting advisories?
- Is the monitoring frequency appropriate for the usage, conditions, and public notification tools in place?
- Have beach program contacts changed?

The beach program manager reached out to local cooperators and health departments in advance of the beach season to identify needed adjustments. Coastal processes change beach dimensions over time, individual beaches may be improved or restored, and beach usage patterns can also change, so local beach managers are given an opportunity to re-evaluate their priority classification and update their information annually. Beach tier, the existence of an operational Nowcast, and impairment status are major considerations in determining the frequency for monitoring and thus in determining funding allocations.

New beaches. In 2023, two new beaches were added to the Beach List at the request of the local health departments. In Bayfield County, the section of shoreline known as Herbster Beach was split into two beaches: Herbster Beach East (Clover Town Park Beach, 0.36 miles long) and Herbster Beach West on DOT property (Fisherman's Beach, 0.24 miles long). The County noted that a jetty separated the two areas, with the Cranberry River mouth opening onto the DOT beach on the west side, and that the public accesses each part of the shoreline at separate parking areas. Both beaches were designated as Tier 2. In Iron County, Health Department staff found Oronto Bay Beach 1 to be inaccessible due to high water, and did not monitor there; instead, they requested a monitoring site inside the marina in an area where people regularly swam. Since the water quality inside the marina was expected to differ from that at Saxon Harbor East and West beaches on the shoreline, a monitoring site called Saxon Harbor Marina was added as a Tier 2 beach. The Oronto Bay beaches remain on the Beach List, as fluctuating lake water levels may allow access from Saxon Harbor along the shoreline in future years.

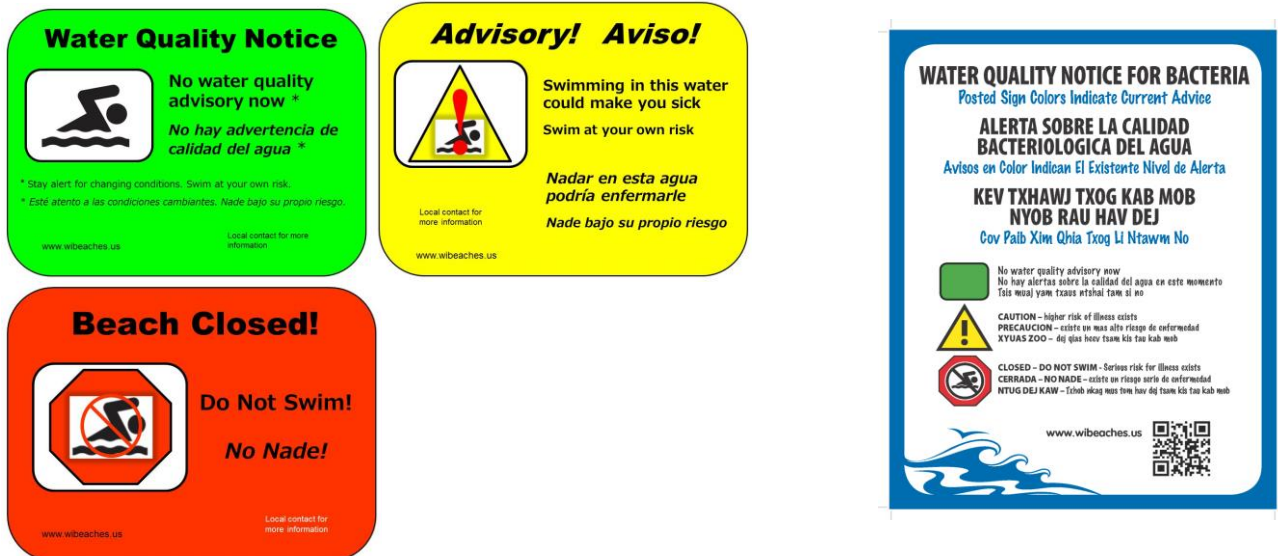
Annual Sanitary Surveys. The federal fiscal year 2022 BEACH Act grant of \$226,000 from the United States Environmental Protection Agency (USEPA) supported monitoring and public notification programs in 13 of the 15 coastal counties in 2023. The beach list identified 195 coastal beaches extending 57.8 beach miles. The BEACH grant funded public notification of water quality conditions at 108 locations, and all 24 Tier 1 beaches participated in the program. Basic sanitary survey information, *E. coli* results, and the status of the beach (open, advisory, or closure) were posted to the Wisconsin Beach Health website (www.wibeaches.us). In 2023, funding allowed counties to be reimbursed for conducting EPA's annual sanitary surveys. Eight counties chose to participate, and 5 declined due to capacity reasons. Various communities supplemented their allocated funding to intensify monitoring, investigate contaminant sources through sanitary surveys or source identification through DNA testing, and evaluate effectiveness of restorations.

Database functionality. This was the third year that the new DNR-designed website and database user interface were operational. DNR continued working with users to assist with data entry, increase functionality based on user feedback, and address issues. New functionality was added to the database/data entry portal to allow beach managers to enter additional data regarding potential harmful algal blooms (HABs). Closures due to potential HABs can now be indicated by “visual observation of algae” or “algal toxins confirmed”, and the data entry portal now accommodates up to four additional tests including microcystin and cylindrospermopsin.

Management actions. The Wisconsin Beach Program relies on local public health organizations along the coastline for primary outreach and communication. In addition, DNR and the health departments often coordinate closely with local parks departments for on-the-ground beach management. Additionally, beaches are often adjacent to public infrastructure, so developing effective management practices may involve public works or transportation departments. When considering the number of departments with functions that may affect beach management, our stakeholders have come to appreciate the importance of coordinating beyond the usual department boundaries, particularly for implementing best management practices (BMPs), addressing sources of contamination, and implementing beach restorations. An example of this coordination is the Waterway Restoration Partnership working to implement BMPs and beach restorations in the Milwaukee Estuary Area of Concern; there are many diverse partners including the City of Milwaukee, Milwaukee County Parks, EPA, Milwaukee Metropolitan Sewerage District, and DNR.

Water Quality Signage

The program uses color-based signs to indicate status of monitored beaches. Green signs are used to indicate that the beach is open and there is no known water quality exceedance. Yellow advisory signs are posted when bacteria levels exceed 235 colonies/100 mL or conditions indicate that an advisory is warranted (e.g. after a rain event). The red beach closure signs are posted when conditions are judged unsafe for swimming. Examples of conditions when these signs may be used include bacteria levels exceeding 1000 colonies/100 mL, following heavy rainfall or flooding, chemical spills, toxins present, or dangerous (rip) current warnings are in effect.



Distribution of the signage is coordinated with Wisconsin State Parks so consistent messaging occurs at inland beaches that use the program’s monitoring and notification systems. Inland communities are encouraged to implement the program voluntarily. Sign templates are made available to inland communities upon request.

Electronic signs. In 2023 Door County and the City of Racine Health Department deployed electronic signs from SwimSmart Technologies at seven beaches along Lake Michigan, using their own funding. The signs use “traffic light” symbology to indicate the beach status. They are controlled remotely using an app, allowing status to be updated as soon as water tests results are available, saving staff time in deploying the sign placards. The Door County signs are located at Egg Harbor, Fish Creek, Bailey’s Harbor, Sunset Park, and Murphy Park, and the lights refer to the beach water quality. The signs deployed at North Beach in Racine County have the capability of being triggered when the NWS surf zone forecasts indicate that high waves and dangerous currents may be present. Since the Lake Michigan beaches south of the Door Peninsula are often subject to these conditions, the City of Racine Health Department uses this feature when water quality is good (or not monitored) but the beach is not being observed, i.e. weekends and during the month of September.



Monitoring Summary Results

Summary data in this section provides information for each county and statewide (Table 1) followed by data for each monitored beach organized by county and grouped by lake. Statistics for the *E. coli* monitoring results were derived from the Wisconsin's Beach Health database. As a function of Wisconsin's prioritizing monitoring at impaired waters and more intensive monitoring at beaches with higher numbers of exceedances, our monitoring program is inherently biased toward locations with higher risk of exceeding the water quality standard. Beach managers may issue advisories based on local conditions or modeled results and some locations sample more frequently to minimize the length of time an advisory may be in effect. Advisories or closures remain in effect until the next monitoring or modeling result indicate that water quality has improved.

Table 1. 2023 Annual sample percentages that exceed the *E. coli* advisory level of 235 CFU (or MPN) /100mL and closure level of 1000 CFU (or MPN)/100mL

County	# of Monitored Beaches	Samples Collected	Beach Action Days*	<i>E. coli</i> Exceedances (>235)	<i>E. coli</i> Closures (>1000)	% Exceedances	% Closures
Ashland	4	134	47	18	8	13.4	6.0
Bayfield	15	267	37	10	2	3.7	0.7
Brown	2	28	2	0	0	0.0	0.0
Door	32	1132	74	71	20	6.3	1.8
Douglas	6	104	7	7	1	6.7	1.0
Iron	3	42	0	0	0	0.0	0.0
Kenosha	6	188	30	18	5	9.6	2.7
Kewaunee	2	102	7	7	2	6.9	2.0
Manitowoc	9	468	137	110	41	23.5	8.8
Milwaukee	9	253	115	30	6	11.9	2.4
Ozaukee	5	206	41	5	1	2.7	0.5
Racine	5	179	56	19	6	10.6	3.4
Sheboygan	7	203	23	10	2	4.9	1.0
Grand total	106	3306	576	307	94	9.3	2.8

*Beach action days may result from a number of hazardous conditions including bacterial contamination, algal blooms, dangerous currents, etc.

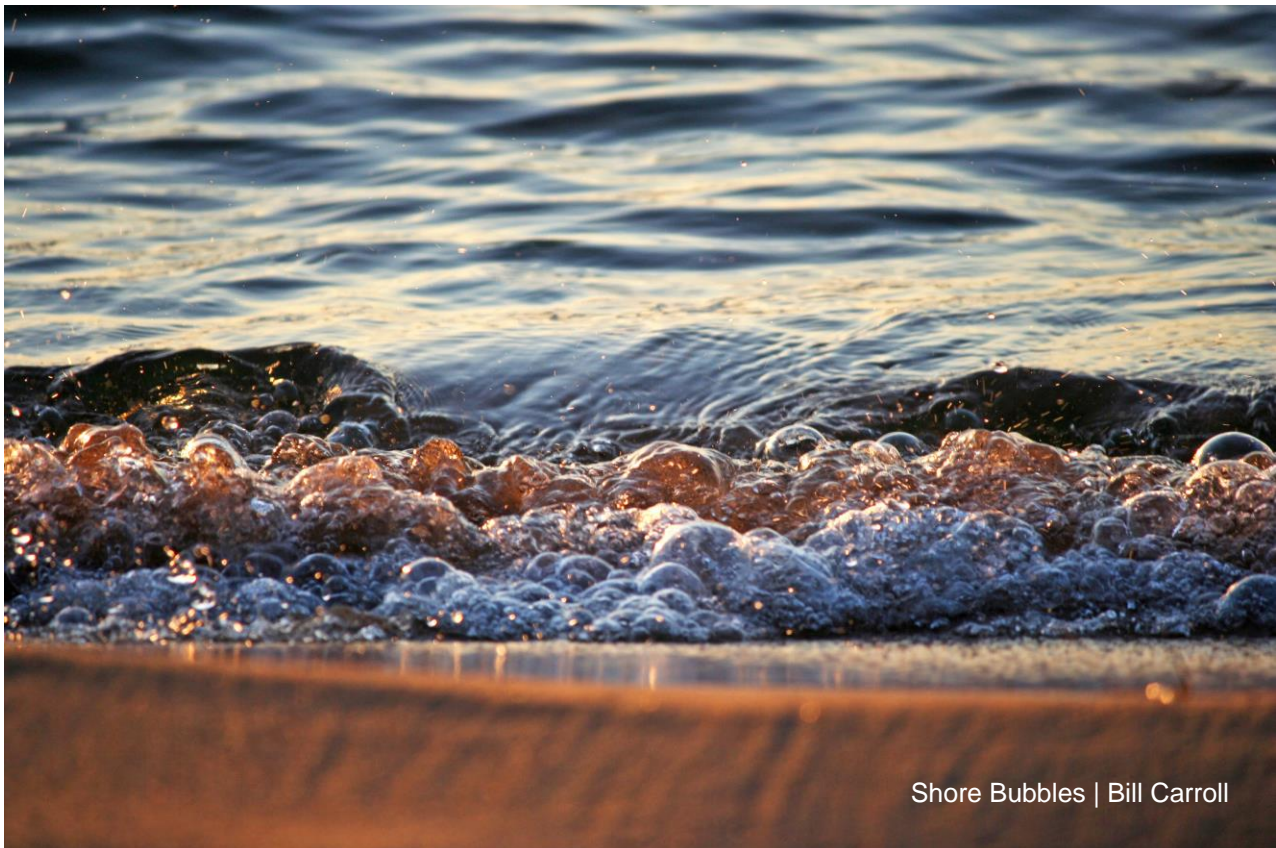
Note: In Douglas County, beach conditions at Shafer Beach were based on adjacent sampling at Dutchman Creek. In Kewaunee County, beach conditions at Selner and Pioneer Parks were based on results from the same sample.

Table 2. Historic Summary of Percentages that exceed the advisory level of 235 CFU/100mL

Blue highlighted cells indicate the same or fewer beach action days in 2023 compared to 2022

COUNTY	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Ashland	4.0	5.8	8.9	13.1	18.8	20.6	20.1	23.4	14.9	34.4	13.1	21.0	19.4	12.1	13.4
Bayfield	0.8	5.8	8.0	5.2	4.0	5.6	2.4	8.6	2.9	8.2	2.6	5.4	2.0	3.4	3.7
Brown	5.2	5.9	2.1	8.7	0.0	NA	NA	NA	NA	NA	0.0	0.0	0.0	0.0	0.0
Door	8.1	4.7	6.0	4.1	5.5	6.7	7.2	8.7	6.1	4.8	3.3	4.8	4.0	7.2	6.3
Douglas	1.5	18.4	23.3	29.7	12.0	29.8	25.7	20.3	26.1	27.7	13.6	6.7	4.9	6.3	6.7
Iron	0.0	7.1	10.5	11.4	16.7	22.2	0.0	0.0	NA	NA	0.0	0.0	2.5	0.0	0.0
Kenosha	23.5	24.0	11.7	18.6	25.9	30.3	13.6	4.6	14.0	22.8	8.3	15.3	6.6	7.1	9.6
Kewaunee	9.1	10.9	33.2	8.1	15.3	15.3	20.9	10.2	5.9	0.0	2.8	5.1	11.3	30.0	6.9
Manitowoc	5.3	16.3	18.9	16.1	16.1	34.6	18.5	11.6	11.9	10.6	9.1	6.6	15.8	19.2	23.5
Milwaukee	12.7	26.1	19.4	25.1	18.6	24.6	25.3	15.9	19.2	26.1	9.2	16.3	17.8	15.0	11.9
Ozaukee	4.8	22.9	6.4	26.1	14.3	17.2	11.7	5.8	14.4	8.5	2.0	8.8	4.8	12.9	2.7
Racine	6.4	0.7	6.8	8.8	12.4	17.2	8.3	8.2	15.0	9.5	6.0	10.9	8.9	11.0	10.6
Sheboygan	13.6	22.7	8.2	17.1	17.1	14.1	8.6	4.9	5.1	16.1	3.8	3.3	6.8	5.3	4.9
Coastal Average	7.3	12.4	11.8	14.4	11.0	18.1	12.6	10.0	10.3	12.1	5.7	7.8	7.9	10.1	9.3

In 2023, six of 13 counties monitored along both Lake Superior and Lake Michigan coasts experienced the same or fewer *E. coli* exceedances than in 2022, the percentage of exceedances overall was slightly lower, and there was a decrease in the number of beach action days: 576 beach days in 2023 compared to 621 in 2022. This decrease does not account for the season-long closure of McKinley Beach for restoration.

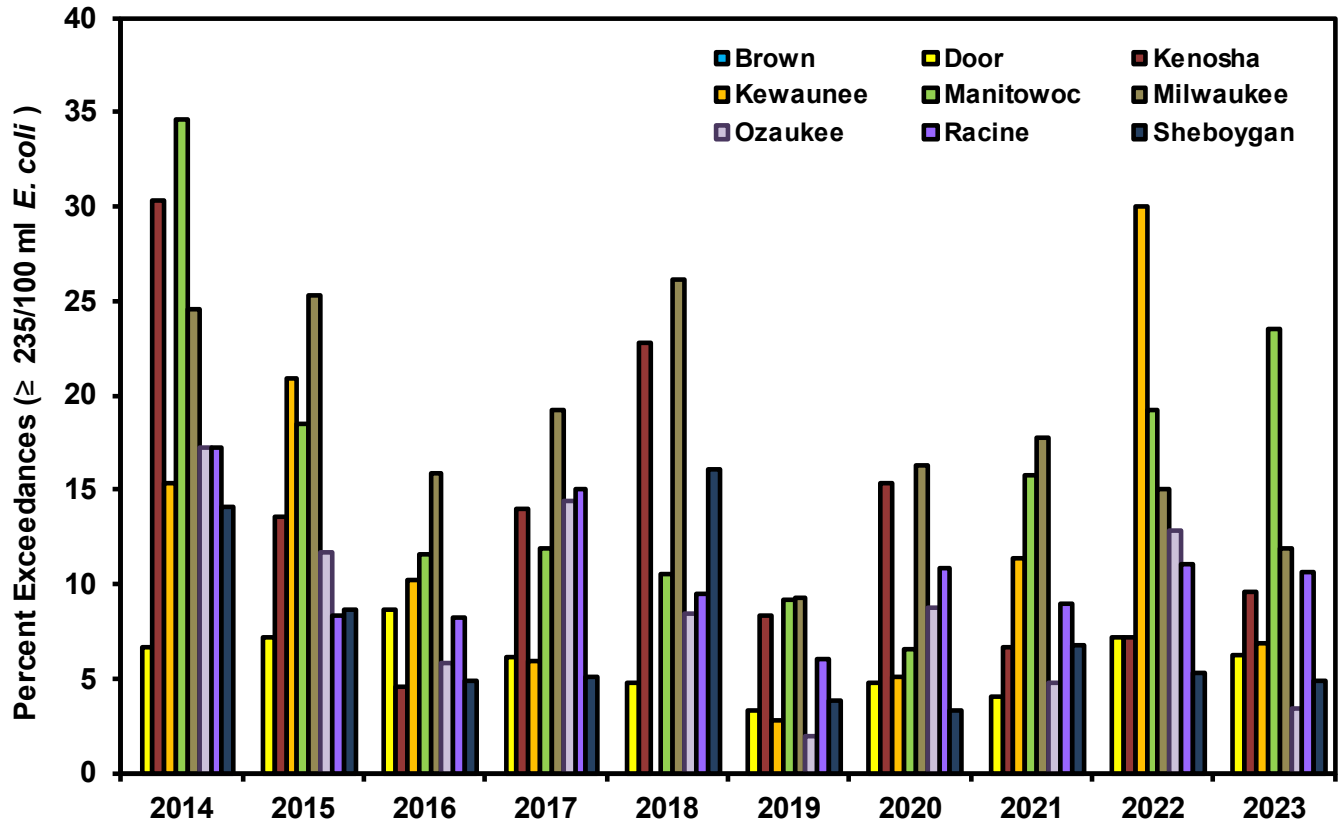


Shore Bubbles | Bill Carroll

Lake Michigan

Seventy-seven beaches in nine counties were monitored along Lake Michigan in 2023. Marinette and Oconto County beaches are identified in Tier 4 with no monitoring and do not receive BEACH Act funding. Maps for all Lake Michigan beaches can be found on the [WDNR beaches webpage](#). There were 485 beach action days in 2023, compared to 548 in 2022.

Lake Michigan Counties 2014-2023



Brown County

This was the 5th year of monitoring at Bayshore County Park, which was added to the list of monitored beaches in 2019 because of its high use. There were no *E. coli* exceedances at Bayshore Beach during the 2023 season, but there were two 1-day closures due to algae. In 2022, Brown County Public Health began monitoring and reporting at Sunset Beach Road Beach.

County/Beach	Samples Collected	Beach Action Days	<i>E. coli</i> Exceedances (>235)	<i>E. coli</i> Closures (>1000)	% Exceedances	% Closures
Brown	28	2	0	0	0.0	0.0
Bayshore Park Beach	14	2	0	0	0.0	0.0
Sunset Beach Road	14	0	0	0	0.0	0.0

Door County

Door County, with 12 Tier 1 beaches, has the highest number of coastal beaches in the state, making it one of the most popular summer tourist destinations in Wisconsin. Door County places an emphasis on regular monitoring, regularly testing 32 of 54 coastal beaches throughout the summer. As with past years, the county used a combination of BEACH Act support and local funding to implement their program. Door County beaches had 74 total beach action days, compared to 101 in 2022, due to the significantly lower number of exceedances at Otumba Park Beach, Murphy Park, Beach and Ephraim Beach.

County/Beach	Samples Collected	Beach Action Days	<i>E. coli</i> Exceedances (>235)	<i>E. coli</i> Closures (>1000)	% Exceedances	% Closures
Door	1132	74	71	20	6.3	1.8
Anclam Park Beach	41	1	1	0	2.4	0.0
Baileys Harbor Ridges Park Beach	54	1	1	0	1.9	0.0
Clay Banks Beach 2	30	3	3	2	10.0	6.7
Egg Harbor Beach	55	3	3	0	5.5	0.0
Ellison Bay Town Park Beach	54	1	1	0	1.9	0.0
Ephraim Beach	56	7	7	2	12.5	3.6
Europe Bay Beach 1	30	1	1	0	3.3	0.0
Europe Bay Beach 3	31	2	2	0	6.5	0.0
Fish Creek Beach	56	11	11	5	19.6	8.9
Gislason Beach	14	0	0	0	0.0	0.0
Haines Park Beach	27	0	0	0	0.0	0.0
Hotz Memorial Park (Europe Bay #2)	37	3	2	0	5.4	0.0
Jackson Harbor Ridges	14	0	0	0	0.0	0.0
Lakeside Park Beach	41	3	2	0	4.9	0.0
Lily Bay Boat Launch Beach	13	0	0	0	0.0	0.0
Murphy Park Beach	55	5	5	4	9.1	7.3
Newport Bay Beach	55	2	2	2	3.6	3.6
Nicolet Beach	54	4	4	0	7.4	0.0
Otumba Park Beach	56	11	11	3	19.6	5.4
Percy Johnson Memorial Park Beach	10	0	0	0	0.0	0.0
Portage Park Beach	28	1	1	0	3.6	0.0
Robert E LaSalle Park	14	1	1	0	7.1	0.0
Rock Island State Park Beach*	13	0	0	0	0.0	0.0
Sand Bay Beach 1	27	2	2	0	7.4	0.0
Sand Dune Beach	14	0	0	0	0.0	0.0
Sandy Bay Town Park Beach	25	2	1	0	4.0	0.0

School House Beach	14	0	0	0	0.0	0.0
Sister Bay Beach	56	7	7	2	12.5	3.6
Sturgeon Bay Ship Canal Nature Preserve	41	1	1	0	2.4	0.0
Sunset Park Beach Sturgeon Bay	52	1	1	0	1.9	0.0
Whitefish Bay Boat Launch Beach	13	0	0	0	0.0	0.0
Whitefish Dunes Beach	52	1	1	0	1.9	0.0



Kenosha County

BEACH Act monitoring for Kenosha County beaches continues to be done through an assistance agreement with the City of Racine, enabling the program to fund summer staff to collect samples. Prairie Shores Beach was converted to a natural area in 2020 and monitoring for that beach ended as a result. The beach is still accessible to the public as a recreational area. Lakeshore Park North monitoring recommenced in 2023 following lower lake levels that allowed safe access. The number of beach action days increased at all the beaches, from 12 in 2022 to 30 in 2023.

County/Beach	Samples Collected	Beach Action Days	<i>E. coli</i> Exceedances (>235)	<i>E. coli</i> Closures (>1000)	% Exceedances	% Closures
Kenosha	188	30	18	5	9.6	2.7
Alford Park Beach	29	4	2	1	6.9	3.4

Eichelman Beach	43	8	6	2	14.0	4.7
Lakeshore Park North	16	2	1	0	6.3	0.0
Pennoyer Park Beach	30	7	4	1	13.3	3.3
Simmons Island Beach	41	5	3	1	7.3	2.4
Southport Park Beach	29	4	2	0	6.9	0.0

*Lakeshore Park North remained inaccessible in 202 due to high water levels on Lake Michigan.

Kewaunee County

Sampling and analyses for Kewaunee and Manitowoc Counties are contracted with the University of Wisconsin – Oshkosh. Two of the 5 Kewaunee County beaches were monitored in 2022. Pioneer and Selner Parks are separated by one city lot, and this proximity combined with the higher usage of Selner Park caused Kewaunee County Public Health Department to use the monitoring results from Selner Park to post advisories at Pioneer Park Beach. The percentage of exceedances fell from a 10-year high of 30% in 2022 to 7% in 2023.

County/Beach	Samples Collected	Beach Action Days	<i>E. coli</i> Exceedances (>235)	<i>E. coli</i> Closures (>1000)	% Exceedances	% Closures
Kewaunee	102	7	7	2	6.9	2.0
Crescent Beach	52	5	5	1	9.6	1.9
Selner Park/Pioneer	50	2	2	1	4.0	2.0

Manitowoc County

UW – Oshkosh monitored 11 of 17 beaches in 2022, including Lakefront Park Beach (formerly Warmwater Beach), which was added to the Beach List in 2021 and monitored weekly. At the request of Manitowoc County Health Department, the shoreline at Memorial Drive/Mariner’s Trail at Waldo was designated as “open” at the request of the Manitowoc County Health Department but remained unmonitored.

There were more exceedances overall and more beach action days in 2023 than 2022. Although most beaches showed fewer exceedances than last year, this was surpassed by the large increases at Lakefront Park and Neshotah Beaches.

County/Beach	Samples Collected	Beach Action Days	<i>E. coli</i> Exceedances (>235)	<i>E. coli</i> Closures (>1000)	% Exceedances	% Closures
Manitowoc	468	137	110	41	23.5	8.8
Blue Rail Marina Beach	55	18	17	8	30.9	14.5
Fischer Park Beaches	31	9	6	2	19.4	6.5
Hika Park Bay	32	21	7	3	21.9	9.4
Lakefront Park Beach	53	25	24	9	45.3	17.0
Memorial Drive Parkway	42	3	3	1	7.1	2.4
Memorial Drive Thiede	40	3	3	0	7.5	0.0
Neshotah Beach	54	20	13	2	24.1	3.7
Point Beach State Forest – Concession Stand Beach	31	2	2	0	6.5	0.0

Point Beach State Forest - Lakeshore Picnic Area Beach*	34	3	3	1	8.8	2.9
Point Beach State Forest - Lighthouse Picnic Area Beach*	34	3	3	1	8.8	2.9
Red Arrow Park Beach	62	30	29	14	46.8	22.6

* Composite sampling was approved for Point Beach based on statistical assessment of the water quality data.



Algoma Lighthouse | Carl Courtois Sr.

Milwaukee County

Multiple government jurisdictions have responsibility for monitoring and making public health decisions for 13 Milwaukee County Great Lakes beaches. The City of Milwaukee continued its partnership with the University of Wisconsin – Milwaukee (UWM) to monitor Bradford, South Shore, and Watercraft beaches. McKinley Beach remained closed during the 2023 season while the County worked to address recreational safety at that location.

Bradford, South Shore, and Watercraft Beaches were all preemptively closed for 12 days due to rainfall. South Shore Beach continued to have a very high percentage of exceedances. This swimming beach will be relocated to an nearby area closer to an opening in the marina breakwall that is subject to less *E. coli* contamination, as an important management action for addressing the Beach Closings Beneficial Use Impairment in the Milwaukee Estuary Area of Concern. The management action list was finalized in August 2022 and was approved by EPA in 2023. Construction is expected to begin in late 2024.

Northshore Health Department is responsible for monitoring northern beaches (Atwater, Klode, and Doctor’s Park). Bay View, Bender, and Grant Park beaches in the South Milwaukee/Oak Park jurisdictions were monitored through an arrangement with Racine Public Health. These beaches experienced a similar number of beach action days to 2022.

County/Beach	Samples Collected	Beach Action Days	<i>E. coli</i> Exceedances (>235)	<i>E. coli</i> Closures (>1000)	% Exceedances	% Closures
Milwaukee	253	115	30	6	11.9	2.4
Atwater Park Beach	27	4	1	0	3.7	0.0
Bay View Park Beach	14	0	0	0	0.0	0.0
Bender Beach	30	2	2	0	6.7	0.0
Bradford Beach	40	12	0	0	0.0	0.0
Grant Park Beach	31	3	3	0	9.7	0.0
Klode Park Beach	27	4	1	0	3.7	0.0
South Shore Beach	40	55	18	4	45.0	10.0
Tietjen Beach/ Doctor's Park	29	5	2	1	6.9	3.4
Watercraft Beach	15	30	3	1	20.0	6.7

Ozaukee County

The Ozaukee-Washington Health Department (OWHD) monitors five beaches including two in Harrington Beach State Park. There were few *E. coli* exceedances, but a high number of beach action days. Upper Lake Park beach was closed for most of the 2022 season because high water levels made access and sampling of the beach unsafe; this year the beach was closed for 21 days in June due to a landslide and structural damage to the beach path.

County/Beach	Samples Collected	Beach Action Days	<i>E. coli</i> Exceedances (>235)	<i>E. coli</i> Closures (>1000)	% Exceedances	% Closures
Ozaukee	206	41	5	1	3.4	0.5
Concordia University	28	6	1	0	3.6	0.0
Harrington State Park - North	54	6	1	0	1.9	0.0
Harrington State Park - South	53	1	1	1	1.9	1.9
South Beach	27	0	0	0	0.0	0.0
Upper Lake Park *	22	28	2	0	9.1	0.0

*Composite sampling at Upper Lake Park

Racine County

The City of Racine places a high priority on monitoring its beaches and uses rapid methods and multiple tools to determine water quality conditions. Racine typically uses a weight of evidence approach at North and Zoo beaches that includes sanitary surveys, *E. coli* testing, qPCR and Nowcasting. Seventeen of the beach action days at North Beach and Zoo Beach were closures

due to dangerous currents and nearshore conditions forecast by the National Weather Service or observed by lifeguards.



County/Beach	Samples Collected	Beach Action Days	<i>E. coli</i> Exceedances (>235)	<i>E. coli</i> Closures (>1000)	% Exceedances	% Closures
Racine	179	56	19	6	10.6	3.4
Myers Park Beach	16	2	2	2	12.5	12.5
North Beach*	66	23	5	3	7.6	4.5
Parkway Beach	16	2	2	0	12.5	0.0
Wind Point Lighthouse Beach	15	1	1	0	6.7	0.0
Zoo Beach*	66	28	9	1	13.6	1.5

*Composite sampling at North and Zoo Beaches

Sheboygan County

Sheboygan County monitors 7 of 14 coastal beaches including two at Kohler-Andrae State Park. The overall numbers of exceedances and beach action days have remained low for the last several years.

County/Beach	Samples Collected	Beach Action Days	<i>E. coli</i> Exceedances (>235)	<i>E. coli</i> Closures (>1000)	% Exceedances	% Closures
Sheboygan	203	23	10	2	4.9	1.0
Amsterdam Beach	14	0	0	0	0.0	0.0
Blue Harbor Beach	29	1	1	0	3.4	0.0
Deland Park Beach	30	9	3	0	10.0	0.0
General King Park Beach	29	1	1	1	3.4	3.4

Kite Surfing Area - Clara Ave	17	4	2	1	11.8	5.9
Kohler Andrae State Park North/Nature Center Beach	42	2	1	0	2.4	0.0
Kohler Andrae State Park Picnic Beach North and South	42	6	2	0	4.8	0.0

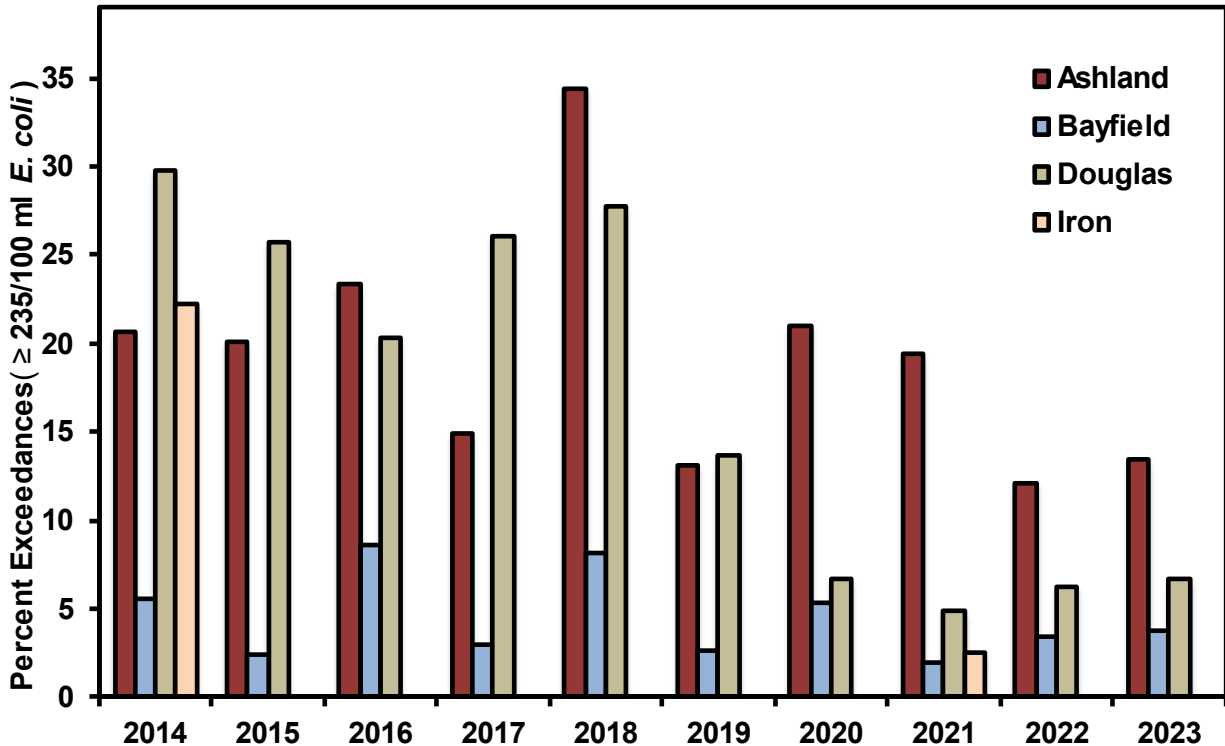


“Kohler Andrae SP Boardwalk” | Matthew Jim Koepnick

Lake Superior

While storms continue to be an issue in Lake Superior, all beaches were open and monitored during the 2023 season. Except for Iron County, there was a small increase in number of beach action days compared to 2022. Maps for all Lake Superior beaches can be found on the [WDNR beaches webpage](#).

Lake Superior Counties 2014-2023



Ashland County

Monitoring of 4 of 8 coastal beaches in Ashland County is contracted with Northland College with approval of Ashland County Health and Human Services. The Ashland Parks director is an active participant in the Wisconsin Coastal Beach Working Group and has worked to develop effective public messaging for their beaches. The number of exceedances and closures was slightly higher than in 2022, and the number of beach action days increased by almost 18% due to a significant increase in exceedances at Maslowski Beaches.

County/Beach	Samples Collected	Beach Action Days	<i>E. coli</i> Exceedances (>235)	<i>E. coli</i> Closures (>1000)	% Exceedances	% Closures
Ashland	134	47	18	8	13.4	6.0
6th Ave W Beach	28	4	1	0	3.6	0.0
Bayview Park Beach	16	4	1	0	6.3	0.0
Kreher Park Beach	31	17	7	4	22.6	12.9
Maslowski Beaches	59	22	9	4	15.3	6.8



Bayfield County

Bayfield County received BEACH Act funding to monitor 15 of 21 BEACH Act beaches. At the request of the Bayfield County health department, Herbster West – Fisherman’s Beach was added to the beach list, and Wikdal Memorial Boat Launch was monitored weekly for the month of August. Although the number of exceedances remained low, beach action days increased from 19 in 2022 to 37 in 2023, mainly due to multi-day advisories at Thompson West End Park.

County/Beach	Samples Collected	Beach Action Days	<i>E. coli</i> Exceedances (>235)	<i>E. coli</i> Closures (>1000)	% Exceedances	% Closures
Bayfield	267	37	10	2	3.7	0.7
Broad Street Beach	13	0	0	0	0.0	0.0
Herbster Beach - Clover Town Park Beach	26	0	0	0	0.0	0.0
Herbster Beach West - Fisherman's Beach	13	0	0	0	0.0	0.0
Little Sand Bay Beach	13	0	0	0	0.0	0.0
Memorial Park Beach Washburn	13	0	0	0	0.0	0.0
Port Wing Beach East	14	1	1	0	7.1	0.0
Port Wing Beach West	13	0	0	0	0.0	0.0
Sioux River Beach North	26	0	0	0	0.0	0.0

Sioux River Beach South	26	0	0	0	0.0	0.0
Siskiwit Bay Beach East	26	0	0	0	0.0	0.0
Siskiwit Bay Beach West	26	1	1	0	3.8	0.0
Thompson West End Park Beach	28	28	7	2	25.0	7.1
Washburn Marina Beach	13	0	0	0	0.0	0.0
Washington Avenue Beach	13	7	1	0	7.7	0.0
Wikdal Memorial Boat Launch Beach*	4	0	0	0	0.0	0.0

*Wikdal Memorial Boat Launch was monitored once per week in August.

Douglas County

Monitoring at Douglas County beaches was performed by the Lake Superior Research Institute at UW-Superior, with approval from Douglas County Health and Human Services. The number of beach action days at Wisconsin Point beaches has continued to remain low following the completion of restoration work in 2019. The number of *E. coli* exceedances was the same as in 2022 and the number of beach action days decreased, but fewer samples were taken, resulting in a slight increase in the percent exceedances. Due to budget constraints and similar water quality conditions at Dutchman's Creek and Shafer Beach, Shafer Beach was not monitored in 2023.

County/Beach	Samples Collected	Beach Action Days	<i>E. coli</i> Exceedances (>235)	<i>E. coli</i> Closures (>1000)	% Exceedances	% Closures
Douglas	104	7	7	1	6.7	1.0
Barker's Island Inner Beach	28	0	0	0	0.0	0.0
Wisconsin Point Dutchman Creek	15	1	1	0	6.7	0.0
Wisconsin Point Lighthouse (# 5)	14	0	0	0	0.0	0.0
Wisconsin Point Lot 1 (#1)	17	4	4	1	23.5	5.9
Wisconsin Point Lot 3 (formerly Lot 12)	15	1	1	0	6.7	0.0
Wisconsin Point Lot 4 (SE of Breakwater)	15	1	1	0	6.7	0.0
Wisconsin Point Shafer Beach (#2)*	NA	NA	NA	NA	NA	NA

*Shafer Beach was not sampled or posted in 2023.

Iron County

Iron County beaches were rebuilt following storm damage in 2016 and were re-opened in 2019. Since then, water quality has been excellent. In this fifth full year post-restoration, there were no *E. coli* exceedances. In 2023 monitoring responsibilities transferred from UW-Oshkosh to the Iron County Health Department. At their request, a new "beach" inside the Saxon Harbor Marina was established and sampled for the first time. The health department reported that Oronto Bay Beach was inaccessible.

County/Beach	Samples Collected	Beach Action Days	<i>E. coli</i> Exceedances (>235)	<i>E. coli</i> Closures (>1000)	% Exceedances	% Closures
Iron	42	0	0	0	0.0	0.0
Saxon Harbor Beach East	14	0	0	0	0.0	0.0
Saxon Harbor Beach West	14	0	0	0	0.0	0.0
Saxon Harbor Marina	14	0	0	0	0.0	0.0



Little Sand Bay Sunset | Andrew Jalbert

Wisconsin Coastal Beaches Working Group

While they did not meet formally in 2023, members of the Working Group presented a workshop on predicting beach conditions using the Virtual Beach software at the Great Lakes Beach Association Conference in Sturgeon Bay, Wisconsin. The meeting was hosted by the beach managers at UW-Oshkosh. The working group members continued to develop a Virtual Beach online training course to be released in 2024.

Funding Priorities and Budget

Funding for monitoring considered the beach priority (Tier), ability to leverage other funding or partnership arrangements, locations with operational Nowcasts, travel considerations, and status on the 303(d) impaired waters list. The highest priority for funding continued to be upgrading and maintaining the Wisconsin Beach Health database and website, a central tool for notifying the public about beach conditions and managing the data reported to EPA as required by the grant. State

funds supplement the BEACH Act funding to cover operational costs and provide access to the site for inland counties who report their monitoring data voluntarily. Many counties supplement the funding available through the grant to increase the number of beaches monitored or sample beyond the minimum frequency specified by contract. The approved budget for county subawards was originally \$200,000. Based on some cost saving to website upgrades we were able to reallocate additional funds to monitoring efforts. In addition to the amounts below for the 2023 season \$7,415 was used for initial efforts in the 2024 season.

Table 3. Allocation of Beach Act Funds for the 2023 Season

Participating Locations/Counties	Contracted \$
Ashland County (Northland College)	\$9,449
Bayfield County	\$17,308
Brown County	\$2,108
Door County	\$65,000
Iron County	\$4,953
UW – LSRI (Douglas County)*	\$17,964
UW – Oshkosh (Kewaunee, and Manitowoc Counties)	\$26,337
Milwaukee, City of	\$11,000
Northshore/Shorewood (Milwaukee County)	\$9,025
Ozaukee County	\$10,775
City of Racine, (Racine, Kenosha and South Milwaukee)	\$27,398
Sheboygan County	\$12,442
Total	\$213,759

Lessons Learned and Improvement Opportunities

Multiple organizations (e.g. parks, public works, public health, transportation) are involved in beach management or have operations that affect water quality at the beach. Their operations and budgets may not be connected on the local level which may require extra coordination and communication. Through Wisconsin statutes, public health departments have the authority to issue advisories and closures based on conditions at the beaches. Beach program operations and communications must consider those authorities and relationships.

Funding allocations in 2023 made it possible for jurisdictions to be reimbursed for completing EPA’s Annual Sanitary Surveys at their beaches. Beach managers were advised to complete as much of the 10-page survey form as they were reasonably able, and to include photos of the beach and infrastructure as well as aerial photos with beach extent delineated and potential pollution sources marked. They were provided with personalized guidance and the EPA manual for the performance of the surveys. Several managers reported being interested in finding out more about their beaches, and LSRI chose to perform surveys at the four unmonitored beaches in rural Douglas County to see if they should be monitored in the future.

Although sourcing much of the suggested data (e.g. watershed information) seemed straightforward, managers reported that in some cases data were difficult to find. This varied with the County organizational structure, purviews of the different departments, and capacity and expertise of the personnel. Several counties reported lacking capacity to create a report that they

considered meaningful, and that the amount of time and effort required to find and assemble the information was more than they had expected. As a result, the reports ranged in content from only the survey form with partial hand-written information, to a substantially complete form with maps, photos, and some statistical analysis. It became clear that health departments with limited staff and more than a few beaches did not have capacity to complete full surveys every year at all beaches. Those that wished to continue with the surveys were advised to perform them at any given beach every few years or when changes in the environments had occurred or were expected to occur; this sequencing of beaches will allow fewer to be surveyed each year and more time per beach.

The lack of aggregate data resulting from the decommissioning of the EnDDaT system proved to be a barrier not only for Nowcasting but for the annual sanitary surveys. As part of the Virtual Beach workshop, lists of many data sources were provided. Some managers reported that they did not have the time to search through websites for data applicable to their beaches. Data were more readily available for the urban counties on Lake Michigan, where the beaches are more closely spaced, and lake traffic is heavier. The more rural counties on Lake Superior, especially Bayfield, proved to have limited weather and water condition data available due to lack of nearby stations or buoys.

In 2023 Door County and City of Racine Health Departments began a pilot program of deploying electronic signs from SwimSmart Technologies. The beach managers activated the status remotely using an app, allowing status to be changed as soon as test results are received, and save staff time and fuel that would otherwise be used to drive many miles to place sign placards. Preliminary feedback from the public is favorable, as the signs are highly visible from a distance, and there are indications that compliance with advisories and closures is higher. At a base price of \$6,000 per sign, the cost is currently prohibitive for many agencies, who must procure their own funding. However, the automatic features of the signs that allow an advisory or closure to be activated by NWS forecasts may be valuable at beaches south of the Door peninsula, where hazardous waves and currents are often a serious issue. More signs are likely to be deployed as their capabilities are refined and especially if the cost decreases.



Brothers' Sunrise | Wendi Huffman