

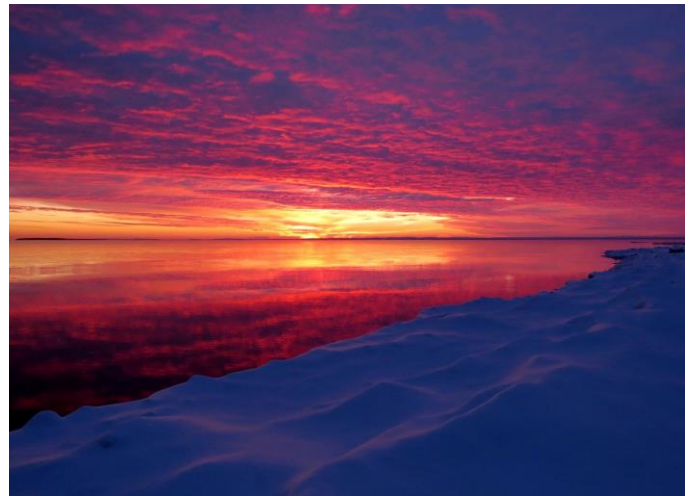


Wisconsin's Great Lakes Beach Monitoring & Notification Program

2017 Beach Season Summary



Gulls at the Beach
Kohler-Andrae State Park
Photo Credit: Victoria Almgren



Sioux Beach Sunrise
Sioux Beach, Lake Superior
Photo Credit: Eric Iverson

Office of Great Waters
Wisconsin Department of Natural Resources
September 28, 2018

Acknowledgements

USGS continues to host the Beach Health website that supports program operations. USGS continues to provide tremendous support and service to our program and last year was no exception.

We also recognize Lindsey Page (City of Milwaukee Health Department) and Todd Breiby (DOA Coastal Program) for their leadership of the Wisconsin Coastal Beaches Stakeholders Group.

Thanks to everyone who helps make Wisconsin's Great Lakes Beach Program a success!

County participants include:

Ashland County Health Department
Bayfield County Health Department
City of Milwaukee Health Department
Door County Health Department
Douglas County Health Department
Iron County Health Department
Kenosha County Division of Health

Kewaunee County Health Department
Manitowoc County Health Department
North Shore/Shorewood Health Department
Ozaukee County Health Department
City of Racine Public Health Department
Sheboygan County Human Services
South Milwaukee Health Department

Additional assistance provided by:

University of Wisconsin - Oshkosh, Environmental Research and Innovation Center
Sampling and Analytical Support for Door, Kewaunee, Manitowoc, and Iron Counties

Racine Public Health Department
Sampling and Analytical Support for Kenosha and Racine Counties and South Milwaukee Health Departments

Northland College
Sampling and Analytical Support for Ashland County

University of Wisconsin – Superior, Lake Superior Research Institute
Sampling and Analytical Support for Ashland County

United States Environmental Protection Agency, Region 5
Grant funding

United States Geological Survey, Middleton, Wisconsin

University of Wisconsin - Milwaukee, School of Freshwater Science

University of Wisconsin-Madison, State Laboratory of Hygiene

Wisconsin Dept. of Administration, WI Coastal Management Program

2017 Beach Season: Program Highlights

Wisconsin's Great Lakes Beach Monitoring & Notification Program has operated since 2002 making the summer of 2017 its fifteen season.

Beach program collaborators continued efforts to evaluate the beach list accuracy and priorities 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)?
- How is the water quality? Do we have historical data?
- Have conditions surrounding the beach changed (e.g. restoration, drainage, water levels)?
- How many people use the beach? What do local people call (name) the beach?
- Is the location for the beach and its measurements correct?
- 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?

The beach program coordinator 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. Based on feedback, 4 beaches were added, and Sam Myers beach in Racine was reactivated as an off-shore swimming area. The names for two beaches were updated to be consistent with the locally recognized name. Iron County coastal beaches which were damaged during significant storms in 2016 have yet to be repaired and reopened.

The fiscal year 2016 BEACH Act grant of \$215,000 from the United States Environmental Protection Agency (USEPA) which supported monitoring and public notification programs in 11 of the 15 coastal counties in 2017. The 2017 beach list identified 185 coastal beaches extending 49.9 beach miles. Public notification of water quality conditions occurred at 104 locations (101 funded with the BEACH grant) and all 23 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. 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.

Through interactions at our annual beach stakeholders meeting, the program evaluated an existing mobile application for collecting beach data and then initiated a student project through Michigan Tech to develop a web-based mobile application for collecting sanitary survey data that more fully meets program needs. A limited group of stakeholders participated in testing the application which was designed to function with multiple browsers

Wisconsin's Great Lakes Beach Monitoring & Notification Program relies on local public health organizations along the coastline for primary outreach and communication. They are the primary point of contact for answering questions and responding to requests for information about beach water quality; however, they are not alone in their efforts to manage beach issues. On-the-ground beach management is often the purview of parks departments which requires coordination. Additionally, beaches are often adjacent to public infrastructure, so developing effective management practices may involve public works or transportation departments. When considering

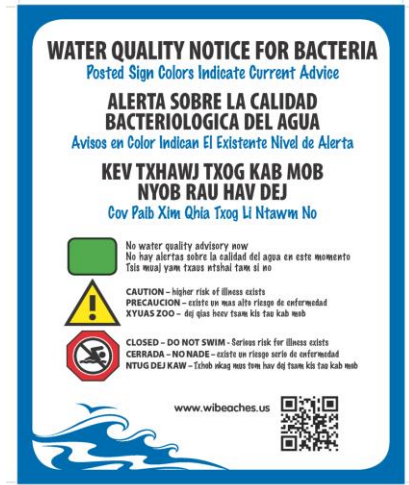
the number of departments with functions that may affect beach management, our stakeholders have come to appreciate the importance of coordinating beyond the usual department boundaries, particularly for implementing best management practices (BMPs), addressing sources of contamination, and implementing beach restorations.

Water Quality Signage

The program completed the beach signage redesign project with revised messaging for the Green (Open), Yellow (Advisory), and Red (Closed) signs. 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 indicate that conditions are 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.

The three colored signs were designed to be used in combination with the general program advisory sign developed in 2015. Key elements in the sign design included:

- Retaining the color-based system
- Recognizable icons accompanying messaging
- Simple, straight-forward wording that can be used for multiple health hazards.
- Space available on the sign for contact information for the local public health contacts



Counties commented that they do not have a large Hmong population visiting their beaches so including that translation was not important to them. The messaging on the three colored signs was simplified to English and Spanish, with the Hmong translation appearing on the blue signage only.



Distribution of the new signage was 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.

Monitoring Summary Results

Summary data in this section provides information for each county and statewide (Table 3) 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. As a result, the frequency with which samples exceed the water quality criteria may not be the same as what beach visitors experience. Advisories or closures remain in effect until the next monitoring or modeling result indicate that water quality has improved.

Table 3. 2017 Annual Sample Percentages that exceed the advisory level of 235 CFU/100mL

County	# of Beaches	Sampled Collected	Exceedances (>235)	Closures (>1000)	% Exceedances	% Closures
Ashland	4	101	15	4	14.9	4.0
Bayfield	12	238	7	1	2.9	0.4
Door	32	1130	69	14	6.1	1.2
Douglas	7	92	24	6	26.1	6.5
Kenosha	7	215	30	8	14.0	3.7
Kewaunee	2	68	4	1	5.9	1.5
Manitowoc	10	253	30	7	11.9	2.8
Milwaukee	10	323	62	24	19.2	7.4
Ozaukee	4	202	29	9	14.4	4.5
Racine	8	206	31	13	15.0	6.3
Sheboygan	7	198	10	2	5.1	1.0
Grand Total	103	3026	311	89	10.3	2.9

Note: In Kewaunee County, beach conditions at Selner and Pioneer Parks were based on results from the same sample. The number of beaches with monitoring is 103 and the number with public notification is 104.

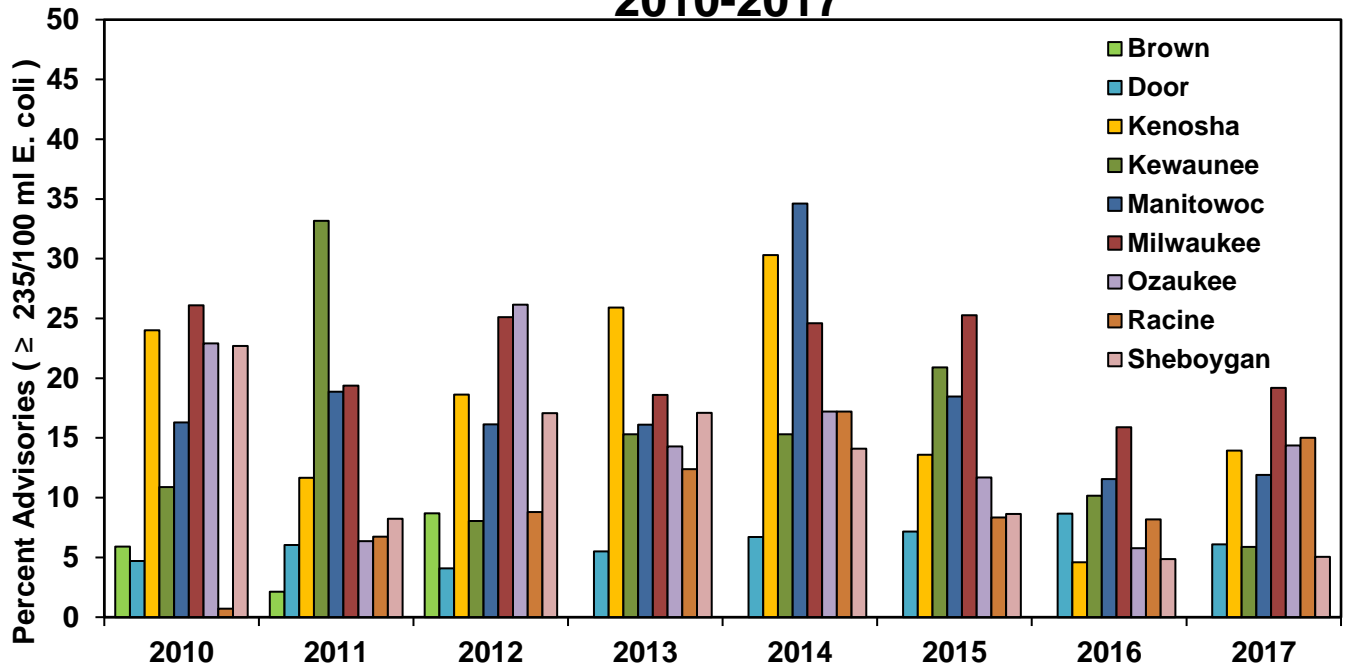
Table 4. Historic Summary of Percentages that exceed the advisory level of 235 CFU/100mL

Blue highlighted cells indicate fewer beach action days in 2017 compared to 2016

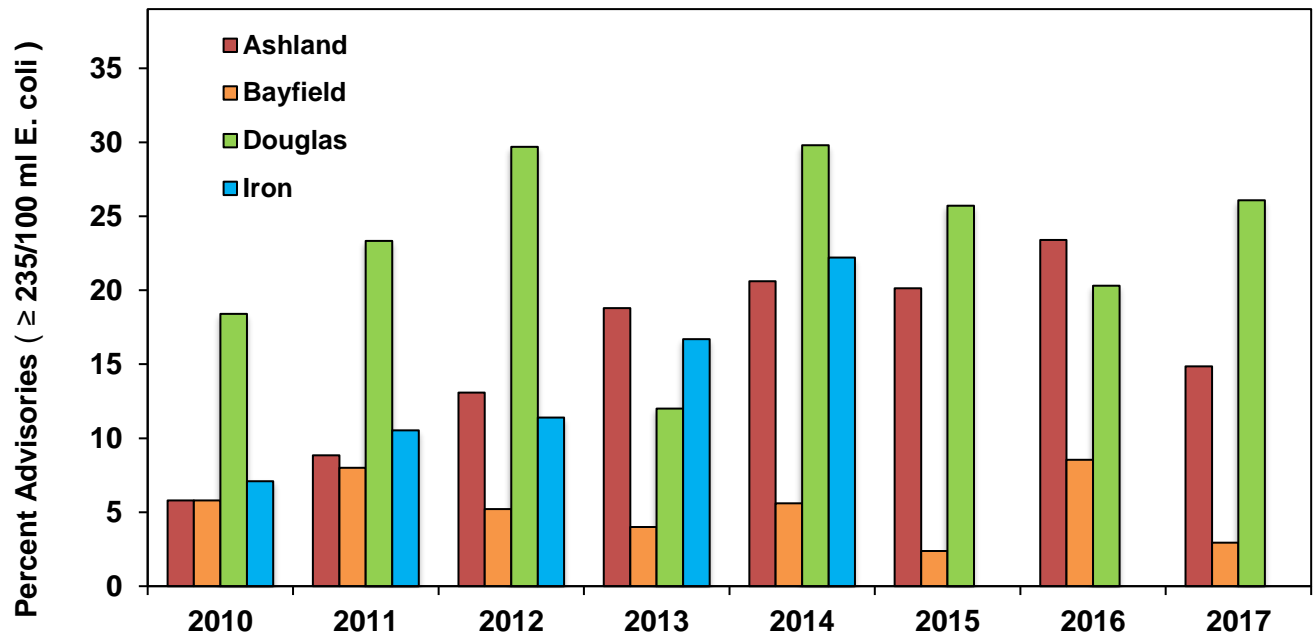
COUNTY	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Ashland	3.2	10.2	4.6	3.5	3.8	3.3	4.0	5.8	8.9	13.1	18.8	20.6	20.1	23.4	14.9
Bayfield	1.9	2.2	4.3	7.1	7.1	3.1	0.8	5.8	8.0	5.2	4.0	5.6	2.4	8.6	2.9
Brown	0.0	2.0	1.8	0.0	4.5	0.0	5.2	5.9	2.1	8.7	0.0	NA	NA	NA	NA
Door	4.1	8.2	6.9	7.3	4.8	6.3	8.1	4.7	6.0	4.1	5.5	6.7	7.2	8.7	6.1
Douglas	9.5	11.8	23.7	12.9	11.3	18.8	1.5	18.4	23.3	29.7	12.0	29.8	25.7	20.3	26.1
Iron	1.1	1.5	2.7	3.5	0.0	0.0	0.0	7.1	10.5	11.4	16.7	22.2	0.0	NA	NA
Kenosha	21.0	36.3	31.9	29.9	32.2	31.7	23.5	24.0	11.7	18.6	25.9	30.3	13.6	4.6	14.0
Kewaunee	26.0	33.9	26.9	33.9	49.7	11.1	9.1	10.9	33.2	8.1	15.3	15.3	20.9	10.2	5.9
Manitowoc	49.6	40.1	20.4	54.4	31.7	31.3	5.3	16.3	18.9	16.1	16.1	34.6	18.5	11.6	11.9
Milwaukee	24.3	38.7	30.3	20.0	23.7	22.4	12.7	26.1	19.4	25.1	18.6	24.6	25.3	15.9	19.2
Ozaukee	15.9	28.9	12.9	17.1	27.6	24.0	4.8	22.9	6.4	26.1	14.3	17.2	11.7	5.8	14.4
Racine	16.5	17.6	7.4	6.9	6.7	6.7	6.4	0.7	6.8	8.8	12.4	17.2	8.3	8.2	15.0
Sheboygan	23.8	30.2	24.8	43.9	28.5	18.1	13.6	22.7	8.2	17.1	17.1	14.1	8.6	4.9	5.1
Coastal Average	14.6	22.2	15.7	17.5	17.1	14.4	7.3	12.4	11.8	14.4	11.0	18.1	12.6	10.0	10.3

Along Lake Michigan, the northern-most counties (Door and Kewaunee) experienced fewer advisories in 2017 than in 2016 and the counties south of Manitowoc experienced more advisories. Sheboygan County makes extensive use of nowcasting at three of its beaches so sample results are not reflective of the number of beach action (advisory or closure) days that a visitor experiences (see beach-specific information in the Sheboygan County section below). Statistics for Racine County are skewed with the inclusion of three locations which were monitored voluntarily; however, when these data are removed and results compared with 2016, beaches experienced slightly fewer advisories in 2017 (see the Racine County section below). Along Lake Superior, Ashland and Bayfield counties had fewer beach action days than in 2016.

Lake Michigan Counties 2010-2017



Lake Superior Counties 2010-2017



Lake Michigan

Brown County has been included in the report because of efforts to restore Bay Beach. Marinette and Oconto County beaches are identified in Tier 4 with no monitoring and do not receive BEACH Act funding.

Brown County

Brown County beach tier placement was re-evaluated as part of the annual evaluation. Bay Shore County Park is heavily used by all types of recreational users and the boat launch is one of the busiest in the county. The park includes a camp ground, and on typical summer days, the beach is full. Review of historic monitoring data (2010 – 2013) suggests that water quality is generally good with only three advisories in four years, one in 2011 and two in 2012. Signs are posted warning that swimming is at your own risk. This information suggested that a tier 2 assignment would be reasonable; however, the county public health department requested that this beach remain as non-participating in the BEACH Act program.



Bayshore Park Beach Signs
Photo by Donalea Dinsmore

Brown County's 9 beaches did not receive BEACH Act funding in 2017

2017 Contract Frequency	Beach Name	Type/Usage	Nearest City
NA	Bay Beach	Inactive - design project	Green Bay
0	Bay Shore County Park	Boating ramp and adjacent beach	Green Bay
0	Communiversity Park	Boat Launch	Green Bay
0	Joliet Park	Carry in boat launch	Bay Settlement (Green Bay)

0	Long Tail Point (North and South)	Wildlife area - no road access	Green Bay
0	South Bay Marina	Private launch	Green Bay
0	Sunset Beach Road	Boat Launch	Suamico
0	Town of Scott Park	Carry in boat launch	Dyckesville
0	Van Lanen	Beach	Wequiock (Green Bay)
0	Volks Landing Boat Launch	Boat Launch	Dyckesville

The map with Brown County beach locations can be found [here on DNR's beaches web page](#).

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, testing 32 of 54 coastal beaches on the peninsula as well as Washington and Rock Islands throughout the summer. As with past years, the county used a combination of BEACH Act support and local funding to implement their program. This is particularly notable given the transportation costs associated with monitoring the island beaches. Attempts to develop predictive models for beaches in Door County have not been successful, not an unexpected outcome given the relatively low exceedance frequency at these beaches. In 2017, 23 beaches had 2 or less beach action days. Locations with higher exceedance frequencies tended to be on the Green Bay side of the peninsula.

County/Beach	Sampled Collected	Beach Action Days	Samples Exceed (>235)	Closures (>1000)	% Exceedances	% Closures
Door	1130		69	14	6.1	1.2
Anclam Park Beach	28	0	0	0	0.0	0.0
Baileys Harbor Ridges Park Beach	55	0	0	0	0.0	0.0
Clay Banks Beach 2	28	1	1	0	3.6	0.0
Egg Harbor Beach	56	5	5	1	8.9	1.8
Ellison Bay Town Park Beach	56	1	1	1	1.8	1.8
Ephraim Beach	59	8	8	2	13.6	3.4
Europe Bay Beach 1	28	0	0	0	0.0	0.0
Europe Bay Beach 3	28	0	0	0	0.0	0.0
Fish Creek Beach	57	7	7	1	12.3	1.8
Gislason Beach	14	0	0	0	0.0	0.0
Haines Park Beach	33	9	7	0	21.2	0.0
Hotz Memorial Park (Europe Bay #2)	29	1	1	1	3.4	3.4
Jackson Harbor Ridges - WI	14	0	0	0	0.0	0.0
Lakeside Park Beach	29	2	2	0	6.9	0.0
Lily Bay Boat Launch Beach	14	0	0	0	0.0	0.0
Murphy Park Beach	56	4	4	0	7.1	0.0
Newport Bay Beach	56	1	1	1	1.8	1.8
Nicolet Beach	58	8	7	2	12.1	3.4
Otumba Park Beach	57	6	6	0	10.5	0.0

Percy Johnson Memorial Park Beach	14	0	0	0	0.0	0.0
Portage Park Beach	28	0	0	0	0.0	0.0
Robert E LaSalle Park	15	1	1	0	6.7	0.0
Rock Island State Park Beach	14	0	0	0	0.0	0.0
Sand Bay Beach 1	34	11	9	3	26.5	8.8
Sand Dune Beach	14	0	0	0	0.0	0.0
Sandy Bay Town Park Beach	28	0	0	0	0.0	0.0
School House Beach	14	0	0	0	0.0	0.0
Sister Bay Beach	57	4	4	2	7.0	3.5
Sturgeon Bay Ship Canal Nature Preserve	29	1	1	0	3.4	0.0
Sunset Park Beach Sturgeon Bay	56	2	2	0	3.6	0.0
Whitefish Bay Boat Launch Beach	17	2	2	0	11.8	0.0
Whitefish Dunes Beach	55	0	0	0	0.0	0.0

A map with beach locations for Door County can be found [here](#).

Kenosha County

BEACH Act monitoring for Kenosha County beaches was done through an assistance agreement with the City of Racine. This arrangement enabled the program to provide sufficient funding to support summer staff necessary to do the sample collection. Eichelman and Simmons Island were contracted at 3 samples/week and the Lakeshore Park North was contracted for weekly samples. The remaining beaches were contracted for sampling twice per week. Carol Beach in Pleasant Prairie was renamed Prairie Shores and an additional beach was identified in the northern part of Lakeshore Park. A map with beach locations for Kenosha County can be found [here](#).

County/Beach	Sampled Collected	Beach Action Days	Samples Exceed (>235)	Closures (>1000)	% Exceedances	% Closures
Kenosha	215	30	30	8	14.0	3.7
Alford Park Beach	27	2	2	1	7.4	3.7
Eichelman Beach	43	10	9	1	20.9	2.3
Lakeshore Park North	21	0	0	0	0.0	0.0
Pennoyer Park Beach	31	13	8	4	25.8	12.9
Prairie Shores (Lakeshore Drive)	28	9	4	1	14.3	3.6
Simmons Island Beach	39	9	5	1	12.8	2.6
Southport Park Beach	26	2	2	0	7.7	0.0

Kewaunee County

Kewaunee County monitored 2 of 5 coastal beaches in 2017. Beaches in the county experienced a similar number of beach action days as 2016. Pioneer Park, separated by one city lot from Selner Park, was added to the beach list this year. Kewaunee County Public Health Department indicated that more people visit and swim at Selner Park. Considering its proximity, Kewaunee chose to use the monitoring results from Selner Park to post advisories at this beach. Sampling and analyses

are contracted with the University of Wisconsin – Oshkosh at a frequency of 2/week for both beaches. Additional investigative samples (6) were taken across the beach in mid-August following the closure. A map with beach locations for Kewaunee County can be found [here](#).

County/Beach	Sampled Collected	Beach Action Days	Samples Exceed (>235)	Closures (>1000)	% Exceedances	% Closures
Kewaunee	68	4	4	1	5.9	1.5
Crescent Beach	39	3	3	1	7.7	2.6
Selner Park/Pioneer	29	1	1	0	3.4	0.0

Manitowoc County

Monitoring for Manitowoc County continues to be performed by University of Wisconsin – Oshkosh to monitor 12 of 16 beaches. Restoration at Blue Rain Marina beach was completed, and additional sanitary survey work was performed in 2017 to monitor progress. The number of advisories were similar to 2016 with the exception of Hika Park Bay which experienced 5 more action days than in 2016.

County/Beach	Sampled Collected	Beach Action Days	Samples Exceed (>235)	Closures (>1000)	% Exceedances	% Closures
Manitowoc	311	33	32	7	10.3.0	2.3
Blue Rail Marina Beach	31	7	7	1	22.6	3.2
Fischer Park Beaches	17	3	3	1	17.6	5.9
Hika Park Bay	19	6	5	1	26.3	5.3
Memorial Drive Mariners at Waldo	27	2	2	0	7.4	0.0
Memorial Drive Parkway	28	2	2	0	7.1	0.0
Memorial Drive Thiede	27	2	2	0	7.4	0.0
Neshotah Beach	28	1	1	0	3.6	0.0
Point Beach State Forest - Concession Stand Beach*	29	1	1	0	3.4	0.0
Point Beach State Forest - Lakeshore Picnic Area Beach*	29	1	1	0	3.4	0.0
Point Beach State Forest - Lighthouse Picnic Area Beach*	29	1	1	0	3.4	0.0
Red Arrow Park Beach Manitowoc	31	4	4	2	12.9	6.5
YMCA Beach	16	3	3	2	18.8	12.5

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

A map with beach locations for Manitowoc County can be found [here](#).

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 (UW-M) to monitor Bradford, McKinley and South Shore beaches. These beaches experienced significantly more advisories in 2017 as compared to 2016. Milwaukee County Parks has implemented a series of best management practices at these beaches that include grooming and gull deterrence. At South Shore the County implemented a construction project to control run-off from the parking area that includes rain gardens and a fish cleaning station. Significant work and planning has occurred to evaluate additional options for addressing the number of advisories. It should be noted that in 2017, the number of advisories at City of Milwaukee beaches appear not to be attributable to combined sewer overflows (CSO). A single CSO event occurred 2017 releasing a relatively small volume in the upper portion of the watershed. (<https://www.mmsd.com/what-we-do/wastewater-treatment/overflows>).

Northshore Health Department is responsible for monitoring northern beaches (Atwater, Klode, and Doctor’s Park). Klode and Doctor’s Park experienced significantly more beach action days in 2017 than 2016. The Health Department reached out to surrounding communities to discuss public notification procedures for dangerous currents following a death at one of the beaches. Both Wisconsin’s Department of Natural Resources’ Beach Program (and Wisconsin Department of Administration’s Coastal Program provided technical information and listened to concerns about communicating beach hazard information and its relationship to the existing monitoring and notification programs.

Bay View, Bender, and Grant Park beaches in the South Milwaukee jurisdiction were monitored through an arrangement with Racine Public Health. Except for Bay View, advisories at these beaches were more numerous than in 2016.

A map with beach locations for Milwaukee County can be found [here](#).

County/Beach	Sampled Collected	Beach Action Days	Samples Exceed (>235)	Closures (>1000)	% Exceedances	% Closures
Milwaukee	323	137	62	24	19.2	7.4
Atwater Park Beach	27	0	0	0	0.0	0.0
Bay View Park Beach	16	2	2	1	12.5	6.3
Bender Beach	28	5	0	0	0.0	0.0
Bradford Beach	40	21	5	1	12.5	2.5
Grant Park Beach	33	14	7	3	21.2	9.1
Klode Park Beach	27	10	3	0	11.1	0.0
McKinley Beach	56	39	24	7	42.9	12.5
South Shore Beach	57	35	18	12	31.6	21.1
Tietjen Beach/ Doctor's Park	29	11	3	0	10.3	0.0
Watercraft Beach	10	0	0	0	0.0	0.0

Ozaukee County

Ozaukee County added South Beach to its public beach list and updated the name of Upper Lake Park beach to North Beach as it’s known locally. The Ozaukee-Washington Health Department (OWHD) monitored the 4 beaches listed in the table below. OWHD contracted with Concordia College for monitoring the beach on that campus; however, the staff person leading this effort retired and this monitoring did not occur. New staff are in place at OWHD and they committed to monitoring the Concordia site in 2018.

County/Beach	Sampled Collected	Beach Action Days	Samples Exceed (>235)	Closures (>1000)	% Exceedances	% Closures
Ozaukee	202		29	9	14.4	4.5
Harrington State Park - North	58	5	9	5	15.5	8.6
Harrington State Park - South	60	5	8	4	13.3	6.7
South Beach	28	22	5	0	17.9	0.0
Upper Lake Park (aka North Beach)	56	14	7	0	12.5	0.0

A map with beach locations for Ozaukee County can be found [here](#).

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 uses a weight of evidence approach at North and Zoo beaches that include sanitary surveys, E coli testing, qPCR and Nowcasting. Monitoring at Sam Myers Park began this year to characterize the water quality in advance of opening the off-shore swimming area and no advisory information was posted. Three locations in Calendonia were identified as locations where people swim; however the community does not identify these as public beaches. A volunteer organization collected samples and delivered them to Racine for analysis. Advisories were not posted and the data are presented for information purposes. In evaluating the Racine County results, the frequency that samples exceeded water quality is skewed by including the Five and a Half Mile Road and Siena Center results. In comparing frequency of exceedances from the same beaches that were monitored in 2016, there were two fewer samples above the water quality criteria in 2017 (or 7.1% vs. 8.2%)

A map with beach locations for Racine County can be found [here](#).

County/Beach	Sampled Collected	Beach Action Days	Samples Exceed (>235)	Closures (>1000)	% Exceedances	% Closures
Racine	206	6	31	13	15.0	6.3
5 1/2 Mile Road	17	NP	9	5	52.9	29.4
Myers Park Beach	13	NP	1	1	7.7	7.7
North Beach	62	2	2	0	3.2	0.0
Olympia Brown (Curley Rd)	8	NP	1	0	12.5	0.0
Parkway Beach	14	0	1	0	7.1	0.0
Siena Center	14	NP	9	4	64.3	28.6
Wind Point Lighthouse Beach	16	0	3	0	18.8	0.0
Zoo Beach	62	4	5	3	8.1	4.8

Sheboygan County

Sheboygan County monitors 6 of 14 coastal beaches including two at Kohler-Andrae State Park. The park implemented a redesign plan to address erosion and stormwater from the parking lot at the North Picnic beach. Shoreline dunes have been re-established and vegetation was planted in the raingarden. Storms that occurred during the construction period demonstrated that the raingarden functions as designed.

Advisories at Blue Harbor, Deland, and General King Parks are determined with Nowcast models. These models have proven to reliably predict water quality conditions. The sample results from these beaches is used to verify model performance and for recalibration.

County/Beach	Sampled Collected	Beach Action Days	Samples Exceed (>235)	Closures (>1000)	% Exceedances	% Closures
Sheboygan	198		10	2	5.1	1.0
Amsterdam Beach	14	0	0	0	0.0	0.0
Blue Harbor Beach	27	17*	1	0	3.7	0.0
Deland Park Beach	28	5*	3	1	10.7	3.6
General King Park Beach	28	21*	0	0	0.0	0.0
Kite Surfing Area - Clara Ave	14	0	0	0	0.0	0.0
Kohler Andrae State Park North/Nature Center Beach	43	6	5	2	11.6	2.3
Kohler Andrae State Park Picnic Beach North and South	44	1	1	0	2.3	0.0

*Beach action days based on daily Nowcast model and not bi-weekly sampling.

A map with beach locations for Sheboygan County can be found [here](#).

Lake Superior

Storms continue to be an issue in Lake Superior. Iron County beaches remain closed while the harbor area is repaired. The counties along the lake are actively managing their beaches and engaging their communities.



Children Playing at Barker's Island
Photo by Matt Steiger, WDNR

Ashland County

Monitoring for 4 of 8 coastal beaches in Ashland County is contracted with Northland College. 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 remediation project in a bay adjacent to Kreher Park continued through 2017.

County/Beach	Sampled Collected	Beach Action Days	Samples Exceed (>235)	Closures (>1000)	% Exceedances	% Closures
Ashland	101	67	15	4	14.9	4.0
6th Ave W Beach	28	12	4	1	14.3	3.6
Bayview Park Beach	14	7	1	0	7.1	0.0
Kreher Park Beach	29	21	4	2	13.8	6.9
Maslowski Beaches	30	27	6	1	20.0	3.3

A map with beach locations for Ashland County can be found [here](#)

Bayfield County

Bayfield County received BEACH Act funding for 11 of 16 BEACH Act beaches. Myers Beach at the Apostle Islands National Lakeshore participated in the monitoring and notification program; however, as a federal beach, this location was ineligible for BEACH Act funds.

County/Beach	Sampled Collected	Beach Action Days	Samples Exceed (>235)	Closures (>1000)	% Exceedances	% Closures
Bayfield	238	13	7	1	2.9	0.4
Broad Street Beach	14	2	1	0	7.1	0.0
Herbster Beach	27	1	1	0	3.7	0.0
Little Sand Bay Beach	13	0	0	0	0.0	0.0
Meyers Beach	13	0	0	0	0.0	0.0
Port Wing Beach East	13	0	0	0	0.0	0.0
Port Wing Beach West	13	0	0	0	0.0	0.0
Sioux River Beach North	26	0	1	0	3.8	0.0
Sioux River Beach South	26	0	0	0	0.0	0.0
Siskiwit Bay Beach East	26	1	1	1	3.8	3.8
Siskiwit Bay Beach West	26	0	0	0	0.0	0.0
Thompson West End Park	28	9	3	0	10.7	0.0
Washington Avenue	13	0	0	0	0.0	0.0

A map with beach locations for Bayfield County can be found [here](#).

Douglas County

Work along Wisconsin Point (the Point) continues with a City of Superior project to consolidate access points to the shoreline and redesigning the Lot 1 parking area to provide better infiltration of stormwater. Once this redesign is complete, the beach listings and the measurements for the individual beach stretches will be adjusted. Shafer Beach and Wisconsin Point 3 (Dutchman Creek) was restricted until July 15, 2017 (piping plover nesting season) when it was opened. This area continues to experience a high number of birds, attracted at least in part by the active landfill fairly near the beach.

Source assessment of the bacterial contaminants at the Point and Barker's Island continued as part of a Great Lakes Restoration Initiative (GLRI) Area of ConcernC project. Assessment of the investigative samples (DNA analyses) sent to Dr. Sandra McLellan's laboratory at the University of Wisconsin – Milwaukee, School of Freshwater Science determined that birds are the primary source of bacterial contamination along Wisconsin Point. For the Barkers Island beach, human markers were identified from both stormwater and tributary influences. In 2017, sampling intensified in areas adjacent to Barker's Island to confirm the results and identify possible mitigation strategies. Based on these results, the City of Superior obtained a GLRI grant to redesign the beach area to mitigate as many of the sources as possible. Design criteria included both managing stormwater and bird populations.

County/Beach	Sampled Collected	Beach Action Days	Samples Exceed (>235)	Closures (>1000)	% Exceed	% Closures
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Douglas	92	150	24	6	26.1	6.5
Barker's Island Inner Beach	16	68	12	5	75.0	31.3
Wisconsin Point Dutchman Creek (#3)	14	7	1	0	7.1	0.0
Wisconsin Point Lighthouse (# 5)	14	0	0	0	0.0	0.0
Wisconsin Point Lot 1 (#1)	14	14	2	0	14.3	0.0
Wisconsin Point Lot 9 (formerly Lot 12)	14	21	3	0	21.4	0.0
Wisconsin Point SE of Breakwater (#4)	14	21	3	0	21.4	0.0
Wisconsin Point Shafer Beach (#2)	6	19	3	1	50.0	16.7

A map with beach locations for Douglas County can be found [here](#).

Wisconsin Beach Workgroup

During 2017, the Wisconsin Coastal Beaches Workgroup (WCBW) steering committee met quarterly and planned the annual meeting for beach managers. The Great Lakes Beach Association and State of Lake Michigan Conference met in Green Bay on November 7 – 10. Wisconsin beach managers met together on November 11 after the earlier conferences. Through these meetings, the Wisconsin program was able to connect with the Swim Guide and to incorporate principles of the Open Data Standard Project into our public notification system. The session also included an introduction to the mobile application that was developed for the program by Michigan Tech University. The timing for the meeting allowed Bill Kramer from the beach program at EPA headquarters to attend and interact with our local beach managers. This included a discussion of the need to automate the data transfer from the mobile application into Beach Health and give informal feedback on functioning of EPA's Beach application.

Funding Priorities and Budget

Note: Financial paperwork associated with the grant close out documentation identifies actual expenditures charged to this grant.

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 was given to maintaining the USGS website, a central tool for notifying the public about beach conditions and to manage data reported to USEPA as required by the grant. Annual costs for operational and maintenance of these functions is \$41,500. State funds supplement the BEACH Act funding to cover operational costs and provide access to the site for inland counties who participate voluntarily.

Contracts for implementing the program bundled monitoring dollars somewhat regionally to optimize available resources. 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.

Table 1. Allocation of Beach Act Funds for the 2017 Season

Participating Locations/Counties	Contracted \$
Ashland County (Northland College)	\$7,000
Bayfield County	\$8,000
Door County	\$61,000
UW – LSRI (Douglas County)*	\$8,800
UW – Oshkosh (Kewaunee and Manitowoc Counties)	\$18,000

Milwaukee, City of	\$11,000
Northshore/Shorewood (Milwaukee County)	\$4,000
Ozaukee County	\$16,000
City of Racine, (Racine, Kenosha and South Milwaukee)	\$28,000
Sheboygan County	\$13,332
Total	\$175,132

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 can make coordination challenging. This 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.

The beach program provides a uniform mechanism to evaluate water quality and report data. Should funding be withdrawn entirely, counties have little incentive to report their data to EPA. Our inland communities and county public health departments provide a real-world example of the implications of voluntary participation in a monitoring and notification program. Some communities have robust beach monitoring programs; however, may not use the Beach Health website as part of their notification process. Existing funding is stretched extremely thin, with the vast majority of grant dollars distributed through contracts for local implementation. Many communities have limited resources to supplement program activities.

The supplemental funding that support Nowcasting and local skills development ended in 2017. This has significant implications for the future of this effort in Wisconsin. Although a few communities have developed expertise to calibrate models, many do not have the resources needed to maintain their models. As an example, Sheboygan County has implemented two tiered models effectively; however, their beach monitoring is contracted with an environmental consulting firm that would need to build capacity to perform model recalibration work and the community would be charged on a per hour basis. Without support for maintaining existing models, this county may need to abandon the models when they no longer reliably predict beach conditions. In considering the feasibility of contracting with a skilled public health organization for model development and recalibration, cost estimates ranged between \$1500 and \$2000. If EPA provided this expertise or allocated funding to this purpose, this cost-effective tool would be more sustainable.

Awareness of dangerous currents along the Great Lakes is increasing and several drowning deaths were reported in 2017. Communities are interested in addressing this issue and beach managers are particularly interested in how the public notifications and communications dovetail with those issued for recreational water quality. There is a strong need to provide coordinated messaging, so the public understands what conditions are at the beach and manages personal risk effectively.