

Two Casco Bay Beaches Face Periodic Closures due to Pathogen Concerns

Casco Bay Estuary
PARTNERSHIP

Routine water-quality monitoring done by Maine Healthy Beaches program volunteers reveals recurrent challenges at two Casco Bay Beaches—East End Beach in Portland and Willard Beach in South Portland—which consistently rank among the top beaches statewide for advisories posted.

Volunteers Monitor Water Quality

Beaches represent an important recreational and economic asset for coastal communities as long as their waters are “swimmable.” To protect the health of swimmers (particularly vulnerable populations like children), municipalities or parks post advisories or closures if water-quality monitoring reveals potentially dangerous levels of pathogens (based on risk-based thresholds set by the US Environmental Protection Agency). Pathogens of concern (bacteria, viruses and parasites that can prompt gastric illnesses, eye and ear infections and other health issues) often are due to fecal contamination that enters coastal waters through sewage effluent, malfunctioning septic tanks, illegal boat discharges, and agricultural or stormwater runoff.

Monitoring, coordinated by the University of Maine Cooperative Extension and Maine Department of Environmental Protection through the Maine Healthy Beaches program, occurs three times each week between Memorial Day and Labor Day at East End Beach in Portland, twice a week at Willard Beach in South Portland and twice per month at Winslow Park in Freeport. Advisories are issued based on recent bacterial samples, but can also be precautionary, such as when elevated bacteria counts are anticipated due to heavy rainfall conditions. Maine DEP requires that more populous communities identify and correct any human sources of pollution in their municipal stormwater system.



Jim Pennucci



Dori Shatt

Willard Beach and East End Beach Face Recurrent Closures

Of the three beaches routinely monitored in Casco Bay, Willard Beach and East End Beach have extensively developed watersheds, and are issued recurrent swimming advisories by the Maine Healthy Beaches Program and local beach managers. In 2014, Willard Beach was one of only seven beaches in Maine where more than 20 percent of samples exceeded the allowable fecal bacteria threshold. Statewide, about 10 percent of samples exceeded the threshold.

The frequency of advisories, however, is not a precise indicator of conditions as policies for issuing advisories have changed in an effort to better protect public health. Following changing federal guidance, the Maine Healthy Beaches program began recommending in 2012 that communities issue beach advisories based on rainfall (because risk exposure is typically greatest following significant rain due to pathogens in stormwater runoff). Since then, many advisory days have been triggered by rainfall, not water quality testing, making the numbers hard to compare with earlier values.

Elevated Bacteria Levels Likely More Common

Changing conditions can also be assessed by looking at Maine Healthy Beaches historical data (www.mainehealthybeaches.org). By a long-used federal and state standard (issuing an advisory if the number of bacteria exceeded 104 *Enterococci* per 100 ml of water), samples collected at Willard

Beach are more likely to be elevated today than in the past.

A similar trend is possible at East End Beach, but the data are not conclusive. No trend is apparent at Winslow Park.

Municipalities post advisories or closures if water-quality monitoring reveals dangerous levels of pathogens.

Total Beach Action Days per Year at Casco Bay Beaches

Year	Willard Beach, South Portland	East End Beach, Portland	Winslow Park, Freeport
2003	0	0	
2004	7	6	
2005	11	1	
2006	11	0	
2007	3	4	
2008	3	6	0
2009	23	24	0
2010	11	11	3
2011	N/A ¹	9	0
2012	1 ¹	37	2
2013	18	28	0
2014	19	19	0

¹ Willard Beach did not conduct monitoring in 2011, and began sampling in 2012 in mid-August. Starting in 2012, South Portland reduced the number of sampling stations at Willard Beach from 3 to 1.

Changing probabilities should be interpreted with caution, since sampling practices may have changed.

Source: State of the Bay 2010; Keri Kaczor, Maine Healthy Beaches Program. An “action day” refers to the number of days a beach is posted with an advisory against swimming or closed. Updated conditions can be found at www.MaineHealthyBeaches.org.

Changing probability that a water sample submitted to the Maine Healthy Beaches showed elevated bacteria levels (*Enterococci* > 104 CFU/100ml) for three Casco Bay beaches.

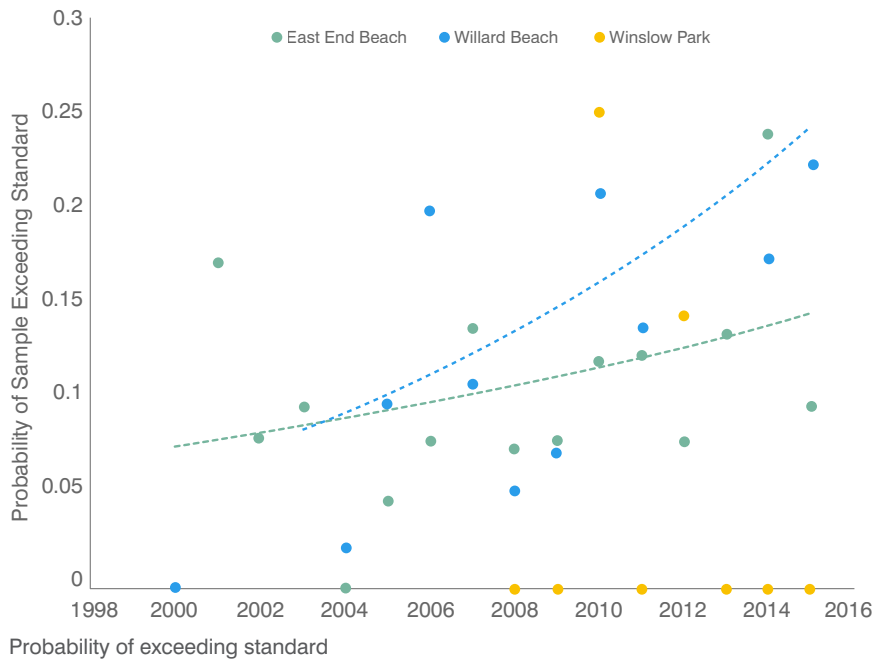
South Portland Works to Address Challenges at Willard Beach

Willard Beach, a sandy beach with intact dunes in a densely populated part of South Portland, is a highly popular destination on hot summer days, not only for those in the neighborhood but residents throughout Greater Portland. While it offers beautiful vistas, the beach faces ongoing water-quality challenges—with more than 100 advisories posted in the past five years. Six stormwater outfall pipes lie along the 4-acre beach, and 40 percent of the immediate watershed is paved.

To identify human sources of bacteria, the Maine Healthy Beaches program and the City of South Portland have employed several tools. First, researchers



Corey Templeton



sampled stormwater catch basins and other locations for both indicator bacteria and optical brighteners (chemicals added to detergent that are typically found in sewage but not in stormwater). Specially trained dogs were brought in to sniff out human sources of sewage.

Using this information, the City honed in on specific locations within the underground stormwater system and, using dye-testing and cameras, identified settings where sewage was leaking into the storm drain system. Through the process, the City was able in 2014 to identify and remove an illicit cross-connection between sewer and stormwater infrastructure (Sims 2015). The City also launched a pet waste and water-quality campaign. To date in 2015, the beach is still experiencing stormwater-related advisories so more research and collaborative work is needed. South Portland’s experience illustrates the ongoing challenge of tracking and addressing nonpoint source pollution.

For additional references and information, please view the Bibliography of the full *State of the Bay 2015* report at www.cascobayestuary.org/state-of-the-bay-2015.