



MAINE

23rd in Beachwater Quality

11% of samples exceeded national standards in 2010

Polluted urban and suburban runoff is a major threat to water quality at the nation's coastal beaches. Runoff from storms and irrigation carries pollution from parking lots, yards, and streets directly to waterways. In some parts of the country, stormwater routinely causes overflows from sewage systems. Innovative solutions known as green infrastructure enable communities to naturally absorb or use runoff before it causes problems. The U.S. Environmental Protection Agency is modernizing its national rules for sources of runoff pollution and should develop strong, green infrastructure-based requirements.

There are more than 30 miles of public-access beaches stretching along Maine's Atlantic waters, including bays, sounds, and estuaries. The coastal beach water quality monitoring program, Maine Healthy Beaches (MHB), is managed by the Maine Department of Environmental Protection (DEP) and coordinated by the University of Maine Cooperative Extension/Maine Sea Grant.

The MHB program provides sophisticated resources and assistance to towns and state parks experiencing poor beachwater quality. For example, because of elevated levels of enterococcus bacteria at Laite Beach and Camden Yacht Club Recreation Area, supplemental funding was obtained from the US EPA to conduct a boater's education campaign and to do additional monitoring in order to identify pollution sources. As a part of this effort, 106 samples were analyzed for enterococcus and an additional 47 samples were analyzed for optical brighteners (laundry detergent additives that, together with elevated fecal indicator bacteria, indicate the presence of human sewage). This monitoring revealed bacterial contributions from storm drain outfalls in the Megunticook River and Rock Brook, from the Camden Wastewater Treatment Facility, and from the large waterfowl population residing in the Camden inner harbor. As a result of the effort, the town of Camden identified two illicit sewage cross-connections to the storm drainage network. A separate investigation in the Rock Brook watershed, led by DEP staff, identified a broken sewer line.

Boater education activities were aimed at convincing boat owners to empty their sewage holding tanks into Camden's pump-out boat instead of emptying them into the ocean. The campaign included developing and distributing education and outreach materials, giving public presentations, and surveying Camden's mooring and slip permit holders. In 2010, 4,000 gallons more sewage was pumped into the pump-out boat than in 2009, though the values in 2009 may have been unusually low due to poor weather conditions and low boat traffic. An increase of 2,000 gallons was pumped into the pump-out boat in 2010 compared with 2008; because both seasons had similar weather and boat traffic, the additional capture in 2010 reflects well on the campaign.¹

In 2010, MHB continued to support intensified monitoring in the Cape Neddick River watershed in an effort to identify sources of beachwater contamination at Cape Neddick Beach. MHB also assisted the town of York in developing a work plan to find and fix sources of pollution impacting the beach. The plan includes conducting sanitary surveys, enforcing the town's septic tank pump-out ordinance, and providing restroom facilities at the beach.³

Additional monitoring conducted by MHB revealed that Lincolnville Beach's elevated levels of bacterial pollution are likely caused by malfunctioning septic systems, wildlife, and illicit connections to the storm drainage network along U.S. Route 1. This area is historically a tidal wetland; it has unsuitable soils and limited space for septic systems, and one restaurant's septic system is underwater when tides are especially high. Local businesses must limit the number of patrons

KEY FINDINGS IN MAINE

Beachwater Contamination

(% of samples exceeding state standards in 2010)

- Goodies Beach in Knox County (45%)
- Laite Beach in Knox County (32%)
- Lincolnville Beach Area in Waldo County (30%)

Reported Sources of Beachwater Contamination

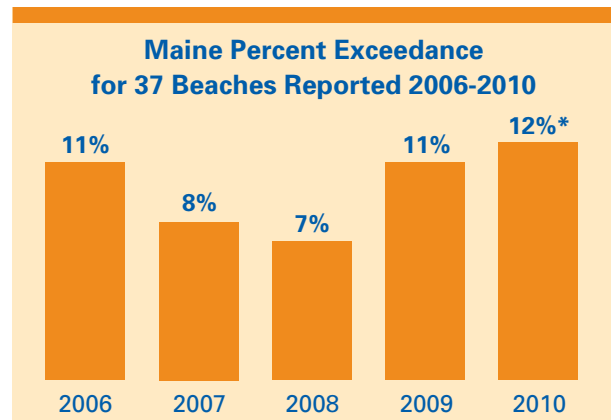
Statewide (number of closing/advisory days)

- 207 (100%) unknown

and hours of operation because of the lack of adequate wastewater disposal options. The town has paid for engineers to plan and design additional wastewater infrastructure that would allow for elimination of septic tanks, but there is currently no money to support construction.³

Special monitoring was conducted in 2010 to help identify sources of contamination at many other beaches in Maine, including the Ducktrap Recreation Area and Higgins Beach, which are under permanent swimming advisories; Goodies Beach, Popham Beach, Old Orchard Beach–Ocean Park, Kinney Shores, Gooches Beach, Ogunquit beaches, Sea Point Beach, and three beaches in southern Maine.³

As of 2010, the beach at the mouth of Ducktrap River is no longer participating in the MHB program as it lacks adequate public parking and access and has low usage. The town has posted it with a permanent swimming advisory and is not promoting it as a swimming area.²



Monitoring Results

In 2010, Maine reported 61 coastal beaches. Of these, 3 (5%) were monitored more than once a week, 54 (89%) were monitored once a week, 2 (3%) were monitored every other week, and 2 (3%) were monitored once a month. For this section of the report, NRDC looked at the percent of monitoring samples that exceeded the state's daily maximum bacterial standards (all reported samples were used to calculate the 2010 percent exceedance rates, including duplicate samples and samples taken outside the official beach season, if any). In 2010, 11%* of all reported beach monitoring samples exceeded the state's daily maximum bacterial standards. The beaches with the highest percent exceedance rates in 2010 were Goodies Beach (45%) and Laite Beach (32%) in Knox County; Lincolnville Beach Area in Waldo County (30%); Short Sands Beach (28%), Little Beach (28%), Riverside (Ogunquit) (24%), Sea Point Beach (24%), and Goose Rocks (21%) in York County; and Lagoon Beach in Sagadahoc County (20%).

Knox County had the highest exceedance rate (33%) in 2010, followed by Waldo (30%), York (10%), Cumberland (8%), Hancock (8%), Sagadahoc (7%), and Lincoln (0%) counties.

Sampling Practices: The monitoring season lasts approximately three months, from Memorial Day through Labor Day. Monitoring is extended to include spring wet-weather monitoring and special studies for targeted areas.²

Monitoring coastal water quality for swimming and other water-contact usage is the responsibility of local jurisdictions, municipalities, or state parks and is not mandated by state law. Samples are taken in 2-3 feet of water. MHB is a voluntary program, and in order to participate, a beach must have a beach management entity that can meet the program's protocols and conditions.

Monitoring sites for each beach are selected at places where people swim, at sources of freshwater inputs to the beach, and near other high-risk features including sewage treatment plant outfalls, and wildlife.³ Once a beach is closed or placed under advisory, MHB recommends that the monitoring frequency increase until the beach is reopened. However, not all localities have the ability to conduct increased monitoring, and as a result the beaches in these towns cannot be reopened until the next routine sample is analyzed.²

For areas experiencing chronic bacterial pollution, additional monitoring sites are added throughout the watershed, and/or wet-weather monitoring is conducted to help determine the sources of pollution.³ Many times, monitoring for special studies conducted by MHB includes analysis of optical brighteners. Optical brighteners are fluorescent white dyes

* Why don't the 2010 percent exceedance values in this summary match? Only samples from a common set of beaches monitored each year from 2006–2010 are included in the bar chart. Because some beaches were not monitored in each of those years, the percent exceedance for this subset of beaches (12%) did not have the same value as the percent exceedance for all of the beaches monitored in 2010 (11%).

that are added to laundry soaps, detergents, paper products, and textiles that make materials appear whiter. Because household plumbing systems mix effluent from washing machines and toilets together, optical brighteners are found in human sewage in septic systems and wastewater treatment plants. When concentrations of optical brighteners are greater than 200 µg/L in water with elevated fecal indicator bacteria levels, human sources of fecal contamination are suspected.³

Closings and Advisories

Total closing/advisory days for 71 events lasting six consecutive weeks or less decreased 17%, to 207 days in 2010 from 250 days in 2009. For prior years, there were 170 closing/advisory days in 2008, 176 days in 2007, 134 days in 2006, and 92 days in 2005. In addition, there were no extended and 2 permanent events (730 days) in 2010. Extended events are those in effect more than six weeks but not more than 13 consecutive weeks; permanent events are in effect for more than 13 consecutive weeks. All closing and advisory days in 2010 were due to monitoring that revealed elevated bacteria levels.

Standards and Procedures: Both closings and advisories are issued in Maine, but closings are rare and occur only when beaches experience chronic high bacteria levels or known safety or public health threats, and in municipalities where closing ordinances are in place.² When determining whether to recommend a beach advisory, MHB applies a single-sample standard for enterococcus of 104 MPN/100 ml.

Results of all monitoring samples are transmitted to the MHB database, and automatic e-mail alerts are issued to beach managers, local officials, and other entities as soon as an exceedance is found. Advisories are not issued solely on the basis of monitoring results. The decision to post a beach is made by the local beach manager (in partnership with MHB staff), who considers factors including bacteria levels, environmental conditions, risk of pollution, and history of high bacteria levels.³ Each decision is made on a case-by-case basis. Depending on the conditions, MHB will recommend an advisory or closing when the standards are exceeded, and the decision to post an advisory or closing for a beach is the responsibility of the town or state park.² The only beach managers who automatically post an advisory or closing after one sample exceeds standards are the state park beach managers for Popham, Ferry (Saco), Kettle Cove, Crescent State Park, Reid-East, Lagoon, and Half Mile beaches. For areas with historically good water quality and a low risk of pollution, an advisory may not be posted until resample results are available. Scarborough Beach is a state park beach but is privately managed, and advisories at this beach may not be issued until resampling confirms an exceedance. Whether to resample before issuing an advisory also depends on the magnitude of the exceedance and knowledge of a pollution event, if any. MHB staff follow up after each exceedance to ensure that state protocols were followed correctly and in a timely manner.²

The program recommends that precautionary rainfall advisories be posted at urban beaches with a history of elevated bacteria levels and stormwater issues. There are a few communities in Maine that, depending on conditions, may post an advisory after a specified amount of rainfall.² Local officials are notified when there is a known sewage spill.

Maine 2010 Monitoring Results and Closing or Advisory Days					
Beach	Tier	Assigned Monitoring Frequency	Total Samples	% of Samples Exceeding State Standards	Closing or Advisory Days
Cumberland County					
Crescent Beach State Park	1	1/wk	26	0%	0
East End Beach	1	3/wk	57	12%	11
Ferry Beach (Scarborough)	1	1/wk	17	18%	4
Higgins Beach	1	1/wk	41	0%	0 (365)*
Kettle Cove Beach	1	1/wk	14	7%	2
Pine Point	1	1/wk	15	7%	0
Scarborough Beach	1	1/wk	42	0%	0

Beach	Tier	Assigned Monitoring Frequency	Total Samples	% of Samples Exceeding State Standards	Closing or Advisory Days
Cumberland County					
Willard Beach	1	2/wk	88	14%	11
Winslow Park	2	2/mo	8	25%	3
Hancock County					
Hadley Point	1	1/wk	16	13%	0
Hulls Cove	1	1/wk	16	13%	2
Sand Beach	1	1/wk	29	3%	0
Hancock County					
Seal Harbor	0	1/wk	11	0%	0
Town Beach	1	1/wk	32	9%	2
Knox County					
Goodies Beach	1	1/wk	22	45%	25
Laite Beach	1	1/wk	19	32%	10
Sandy Beach	1	1/wk	16	19%	2
Lincoln County					
Pemaquid Beach	2	2/mo	14	0%	0
Sagadahoc County					
Half Mile Beach	2	1/mo	6	0%	0
Lagoon Beach	1	1/wk	15	20%	9
Mile Beach	1	1/wk	26	0%	0
Popham–Center Beach	1	1/wk	10	10%	3
Popham–East Beach	1	1/wk	26	4%	3
Popham–West Beach/Morse River	1	1/wk	33	9%	9
Reid–East Beach	2	1/mo	0	NA	0
Waldo County					
Ducktrap River	1	2/wk	0	NA	0 (365)*
Lincolnville Beach Area	1	1/wk	23	30%	8
York County					
Bay View	1	1/wk	14	0%	0
Cape Neddick Beach	1	1/wk	16	13%	3
Casino Square	1	1/wk	19	16%	1
Colony Beach	1	1/wk	15	13%	7
Crescent Beach (Kittery)	1	1/wk	14	7%	0
Crescent Beach (Wells)	1	1/wk	17	18%	0
Drakes Island Beach	1	1/wk	29	3%	0
Ferry Beach (Saco)	1	1/wk	13	0%	0
Footbridge (Ogunquit)	1	1/wk	15	7%	0
Fort Foster	1	1/wk	44	2%	2
Fortunes Rocks Beach	1	1/wk	14	0%	0
Gil Bouche Park/Biddeford Pool	1	1/wk	14	0%	0
Gooches Beach	1	1/wk	34	18%	9

Beach	Tier	Assigned Monitoring Frequency	Total Samples	% of Samples Exceeding State Standards	Closing or Advisory Days
York County					
Goose Rocks	1	1/wk	67	21%	18
Hills Beach	1	1/wk	14	7%	2
Kennebunk Beach	1	1/wk	15	7%	0
Kinney Shores	1	1/wk	14	0%	0
Laudholm Beach	1	1/wk	30	3%	0
Libby Cove Beach	1	1/wk	15	7%	0
Little Beach	1	1/wk	18	28%	12
Long Sands Beach	1	1/wk	100	19%	3
Main (Ogunquit)	1	1/wk	14	0%	0
Middle Beach	1	1/wk	14	0%	0
Middle Beach	1	1/wk	15	7%	0
Moody (Ogunquit)	1	1/wk	16	13%	0
Old Orchard Beach–Central	1	1/wk	56	0%	0
Old Orchard Beach–North End	1	1/wk	28	0%	0
Old Orchard Beach–Ocean Park	1	1/wk	31	6%	1
Riverside (Ogunquit)	1	1/wk	38	24%	18
Sea Point Beach	1	1/wk	17	24%	10
Short Sands Beach	1	1/wk	18	28%	14
Wells Beach	1	1/wk	42	0%	0
Wells Harbor	1	1/wk	15	7%	0
York Harbor Beach	1	1/wk	16	13%	3

*Reported closing or advisory days are for events lasting six consecutive weeks or less. Number of days in parentheses are for events lasting more than six consecutive weeks.

NOTES

1 Maine Healthy Beaches Program. Camden Harbor Water Quality Project. April 2011.

2 Keri Lindberg, University of Maine Cooperative Extension and Sea Grant. Personal communication, May 2011.

3 Maine Healthy Beaches Program. 2010 Report to US EPA. April 2011.

Testing the Waters 2011 reflects data as of June 27, 2011.