



SOUTH CAROLINA 9th in Beachwater Quality

5% 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 63 beaches in South Carolina lining 180 miles of Atlantic coastline (102 miles on the mainland coast and 78 miles on islands without bridges from the mainland barrier islands, or on sandbars). The state's beachwater quality monitoring program is administered by the Department of Health and Environmental Control (DHEC).

Some of South Carolina's Grand Strand communities have constructed stormwater outfalls that discharge deep into the ocean instead of at the beach in order to reduce beach erosion and improve water quality for swimmers. These projects, which cost millions of dollars per ocean

outfall, have created a significant improvement in beachwater quality where they have been implemented. For example, the beach outfall at 7th Avenue South in North Myrtle Beach was converted to a deep ocean outfall in 2006. The percent of samples exceeding the standard for this portion of North Myrtle Beach dropped from an average of 34% between 2002 and 2005 to an average of 2% from 2006 to 2010. A similar effect was seen when Myrtle Beach converted the beach outfall for Deep Head Swash to an ocean outfall: the percent of samples exceeding the standard at this portion of Myrtle Beach dropped from an average of 34% between 2002 and 2005 to an average of 7% from 2006 to 2010.¹ At this time, Myrtle Beach is working on an additional ocean outfall that will be located at 4th Avenue North. When this project is complete, nine existing outfall pipes that currently discharge at the beach will be combined into one pipe underneath the seabed that discharges more than 1,000 feet into the Atlantic Ocean.² NRDC encourages coastal communities to explore solutions that prevent stormwater pollution before it occurs. The high cost of deep ocean outfalls as a solution to beach erosion and beachwater quality problems illustrates the importance of reducing stormwater runoff by implementing green infrastructure wherever possible. In addition to improving beachwater quality, green infrastructure does not transfer pollution to the ocean and has significant other benefits.

In August 2010, heavy rain that fell during Tropical Storm Colin, along with a higher-than-normal high tide, may have contributed to an unusual number of water quality exceedances off the beach on the south shore of Edisto Island. A second round of water quality exceedances occurred at Edisto Island in late September, during heavy rains caused by Tropical Storm Nicole. A sampling study of Big Bay Creek will be conducted in 2011 to try to identify the source of the contamination and to determine whether Edisto Island's monitoring tier status should be changed.²

Tropical Storm Nicole caused flooding in Horry County as well, after which many beachwater quality sample exceedances were observed. For example, along with heavy rainfall, two-thirds of samples taken by Coastal Carolina University for the City of Myrtle Beach on September 28 exceeded the single-sample maximum standard.²

KEY FINDINGS IN SOUTH CAROLINA

Beachwater Contamination

(% of samples exceeding state standards in 2010)

- Myrtle Beach State Park and Campgrounds (15%) in Horry County
- Surfside Beach (11%) in Horry County
- Myrtle Beach (8%) in Horry County

Reported Sources of Beachwater Contamination Statewide (number of closing/advisory days)

- 4 (100%) other unspecified sources

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Converting Deep Head Swash's stormwater outfall to a deep-ocean outfall in Myrtle Beach in 2006.

Myrtle Beach (8%), and Briarcliffe Acres Beach (6%) in Horry County; Edisto Island in Colleton County (5%); and Sullivans Island in Charleston County (5%). Horry County had the highest exceedance rate (7%) in 2010, followed by Colleton (5%), Beaufort (2%), and Charleston (1%) counties. There were no exceedances in Georgetown County.

Sampling Practices: The monitoring season in South Carolina runs from May 15 to October 15. DHEC determines monitoring locations, sampling practices, standards, and notification protocols, which are uniform throughout the state. Samples are taken 12 inches below the surface in water that is 20 to 40 inches deep. A sanitary survey is conducted every time a beach is sampled. In South Carolina, beaches are prioritized for inclusion in the monitoring program on the basis of level of use, water quality history, and other applicable factors. Most of the highest-priority (Tier 1) beaches have stormwater outfalls.²

Sampling is deliberately conducted at swashes and outfalls, where water quality is expected to be at its poorest. Portions of beaches whose water quality has fallen below standards are sampled daily. States that monitor more frequently after an exceedance is found or after heavy rain will tend to have higher percent exceedance rates and lower total advisory days than they would if their sampling schedule did not increase after an exceedance was found or after heavy rainfall.³

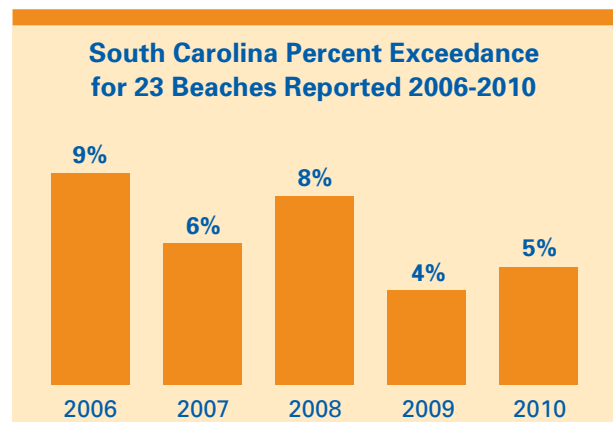
In addition to DHEC monitoring, the City of Myrtle Beach uses Coastal Carolina University to conduct year-round sampling at the sites in Myrtle Beach. Thus, during the state's monitoring season, these sites are monitored twice a week. Also, during the monitoring season, the County Park on Isle of Palms samples twice per month in addition to DHEC's twice a month monitoring schedule, so one of the 9 monitoring stations at this beach is monitored once a month.³

Advisories

Total advisory days for 2 events lasting six consecutive weeks or less decreased 92% to 4 days in 2010, from 48 days in 2009. For prior years, there were 36 days in 2008, 108 days in 2007, 684 days in 2006, and 592 days in 2005. There were no extended or permanent events 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. For the 2 events lasting six consecutive weeks or less, 100% (4) of advisory days in 2010 were due to monitoring that revealed elevated bacteria levels.

Monitoring Results

In 2010, South Carolina reported 63 coastal beaches. Of these, 1 (2%) was monitored more than once a week, 6 (10%) were monitored once a week, 16 (25%) were monitored every other week, and 40 (63%) were not monitored. 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, 5% 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 Myrtle Beach State Park and Campgrounds (15%), Surfside Beach (11%),



Standards and Procedures: The beachwater quality monitoring program has the authority to issue advisories but not closings; in South Carolina, only elected officials can close a beach. South Carolina applies a single-sample maximum standard for enterococcus of 104 cfu/100 ml. Advisories are not issued in South Carolina on the basis of the geometric mean of five samples during a 30-day period.

DHEC issues an advisory immediately when the enterococcus level reaches 500 cfu/100 ml. If the bacteria level is above 104 cfu/100 ml but below 500 cfu/100 ml, an additional sample is collected. If the second sample is also above 104 cfu/100 ml, the department issues an advisory. Advisories include the area of the beach that is within 200 feet on either side of the monitoring station where the exceedance occurred.

A rain model is used for posting preemptive advisories at Horry County's Tier 1 beaches. Sampling results have indicated that use of the model may be resulting in the issuance of advisories that are not necessary, and work to improve the accuracy of the model is under way.¹ Most pipe outfalls and swashes in Horry County are under permanent rainfall advisory, with permanent signs posted. These signs advise the public against swimming in the area of the stormwater outfall.

South Carolina 2010 Monitoring Results and Closing or Advisory Days					
Beach	Tier	Assigned Monitoring Frequency	Total Samples	% of Samples Exceeding State Standards	Closing or Advisory Days
Beaufort County					
Fripp Island	2	2/mo	50	0%	0
Harbor Island	2	2/mo	31	3%	0
Hilton Head Island	2	2/mo	143	2%	0
Hunting Island	2	2/mo	61	2%	0
Beaches in Beaufort County that were not monitored and that had no closing or advisory days in 2010:					
Bay Pointe–North end	Dafuskie Island–	Lands End–North end	The Sands at Port Royal–	across from landing The Sands at Port Royal– beach area Trenchards Inlet (Bull Point)	
Bay Pointe–South end	North east end of island	Lands End–South end			
Beaufort River Sandbar	Hunting Island and Fripp Island Sandbar	May River Sandbar			
Charleston County					
Folly Beach	2	2/mo	96	0%	0
Isle of Palms	2	4/mo*	117	0%	0
Kiawah Island	2	2/mo	60	0%	0
Seabrook Island	2	2/mo	24	0%	0
Sullivans Island	2	2/mo	38	5%	0
Beaches in Charleston County that were not monitored and that had no closing or advisory days in 2010:					
Bird Key	Capers Inlet–South end	Deweese Island–South end	Prices Inlet		
Botany Bay	Capers Island	Kiawah–North end	Privateer Point		
Cape Romain–Key Inlet	Capers Island–North end	Lighthouse Inlet–Morris	Raccoon Key		
Capers Inlet–	Deveaux Banks–North side	Island South end	Stono River–		
North end Deweese Island	Deweese Inlet–North end of	Morris Island–	Limehouse sandbar		
	Isle of Palms	sandbar on North end	Stono River–Wolf Island		
Colleton County					
Edisto Island	2	2/mo	148	5%	4
Beaches in Colleton County that were not monitored and that had no closing or advisory days in 2010:					
Otter Island					

Beach	Tier	Assigned Monitoring Frequency	Total Samples	% of Samples Exceeding State Standards	Closing or Advisory Days
Georgetown County					
Debordieu Beach	2	2/mo	20	0%	0
Garden City Beach	2	2/mo	10	0%	0
Georgetown County					
Huntington Beach State Park	2	2/mo	20	0%	0
Litchfield Beach	2	2/mo	30	0%	0
Pawleys Island Beach	2	2/mo	30	0%	0
Beaches in Georgetown County that were not monitored and that had no closing or advisory days in 2010:					
Debordieu–South end	North Island–North end	North Santee River–	South Island–North end		
Murrells Inlet–North side	North Island–South end	South end of South Island	South Santee River–		
Murrells Inlet–South side		Sandbar off shore of South end of Cedar Island	South end of Cedar Island		
Horry County					
Arcadia Beach	1	1/wk	92	3%	0
Briarcliffe Acres Beach	1	1/wk	68	6%	0
Garden City Beach	2	2/mo	46	0%	0
Myrtle Beach	1	2/wk	888	8%	0
Myrtle Beach State Park and Campgrounds	1	1/wk	92	15%	0
North Myrtle Beach	1	1/wk	232	1%	0
Springmaid Beach	1	1/wk	23	4%	0
Surfside Beach	1	1/wk	162	11%	0
Beaches in Horry County that were not monitored and that had no closing or advisory days in 2010:					
Little River Inlet–North side	Little River Inlet–South side				

NOTES

- 1 Shannon Berry, South Carolina Department of Health and Environmental Control. Personal communication. April 2011.
- 2 South Carolina Department of Health and Environmental Control. 2010 ocean water quality sampling and advisory data report for U.S. EPA Region IV. November 2010.
- 3 Shannon Berry, South Carolina Department of Health and Environmental Control. Personal communication. March 2011.

* One station at this beach (TRI-054B) is monitored 4/mo.

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