



## INDIANA

### 28th in Beachwater Quality

16% 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.

Indiana has 30 Great Lakes beaches stretching along 64 miles of Lake Michigan shoreline in three counties. The Indiana Department of Environmental Management (IDEM) administers the state's beach monitoring and notification program.

### Monitoring Results

In 2010, Indiana reported *E. coli* monitoring data and notification information for 31 Great Lakes beaches. The sampling frequency for the 28 reported beaches were: 7 beaches (23%) were monitored daily, 17 beaches (55%) more than once a week, and the 7 National Lakeshore beach sites (23%) were monitored once a week. 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, 16%\* 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 Jeorse Park Beach I (75%) and Jeorse Park Beach II (67%) in Lake County, Mount Baldy at Indiana Dunes National Lakeshore in La Porte County (32%), Buffington Harbor Beach in Lake County (28%), Lakeview Beach at Indiana Dunes National Lakeshore (26%) and Indiana Dunes State Park East Beach (21%) in Porter County, and Hammond Marina East Beach (21%) and Whihala Beach West (20%) in Lake County.

Lake County had the highest exceedance rate (21%) in 2010 followed by Porter (13%) and La Porte (11%) counties.

**Sampling Practices:** Generally, the monitoring season is from late May through the first week of September, but at some beaches sampling may begin and end a week earlier or later.

Sampling practices, locations, standards, and notification protocols are set by the state or in consultation with the state. Specific monitoring locations are used each year to ensure consistency and representative nature of data. Samples are taken in knee-deep water.

Monitoring frequencies are based on a prioritized ranking of beaches, with higher-priority beaches receiving more frequent sampling. The rankings are based on many variables, which include (but are not limited to) bather use, the proximity to known point and non-point sources, and likely effects from heavy rainfall events.<sup>1</sup> Seven Indiana Dunes National Lakeshore beach sites (Kemil, Lake View, Mount Baldy, Dunbar, West, Central, and Porter) are monitored and voluntarily post monitoring and notification data to the Indiana BeachGuard Web site, even though they are not eligible for BEACH Act funding.<sup>1</sup>

### KEY FINDINGS IN INDIANA

#### Beachwater Contamination

(% of samples exceeding state standards in 2010)

- Jeorse Park Beach I in Lake County (75%)
- Jeorse Park Beach II in Lake County (67%)
- Mount Baldy at Indiana Dunes National Lakeshore in La Porte County (32%)

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

- 358 (88%) unknown sources of contamination
- 40 (10%) no information
- 8 (2%) stormwater runoff

Some beaches are routinely sampled seven days a week, and their monitoring schedules do not change when they are closed or under advisory. At some of the beaches that are not sampled seven days a week, additional samples may be collected during a closing or advisory; at other beaches, the monitoring frequency is not changed.

### Closings and Advisories

Total closing/advisory days for 217 events lasting six consecutive weeks or less increased 45% to 406 days in 2010 from 387 days in 2009. For previous years, there were 333 days in 2008, 213 days in 2007, 111 days in 2006, and 131 days in 2005. There was one extended event (53 days) and no 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.

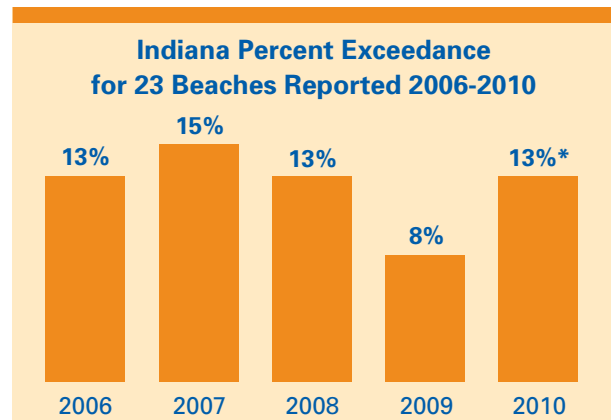
For the 217 events lasting six consecutive weeks or less, 89% (360) of closing/advisory days in 2010 were due to monitoring that revealed elevated bacteria levels, 1% (6) were preemptive (i.e. without waiting for monitoring results) due to heavy rainfall, and there was no information for 10% (40).

**Standards and Procedures:** Both closings and advisories are issued in Indiana. The state has an *E. coli* single-sample maximum standard of 235 cfu/100 ml. The BEACH Act's freshwater beach *E. coli* standard for the geometric mean of five samples taken over a 30-day period of 126 cfu/100 ml is not applied when making closing and advisory decisions.

Beach managers issue an advisory or closing if monitoring results indicate the presence of *E. coli* in concentrations greater than 235 cfu/100ml.<sup>1</sup> There is no protocol for forgoing a closing or advisory when a single-sample exceedance occurs, and resampling to confirm an exceedance is not done before a closing or advisory is issued.

BEACH Act grants have been used to partially fund the development of models that predict beachwater quality. These models make predictions based on current conditions, turbidity, chlorophyll content, and color. A model called Project SAFE was used in 2010 for Ogden Dunes, Wells Street, Marquette, and Lake Street beaches.<sup>2</sup> Each weekday morning, beach managers were given the model's predicted likelihood that the *E. coli* count would exceed safe limits. On that basis, the beach manager chose whether to issue an advisory or closing. Physical bacterial monitoring continued at these beaches to complement the predictive modeling information.

Beach managers have the discretion to preemptively issue advisories or closings if conditions that may result in elevated *E. coli* levels exist, such as heavy rainfall or combined sewer overflow events.<sup>1</sup> La Porte County issues an advisory if excessive debris, such as oil globules, or algae are found in the lake or on the beach. Beach managers can also close a beach for weather and current conditions, such as a rip current.



\* 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 (13%) did not have the same value as the percent exceedance for all of the beaches monitored in 2010 (16%).

<b>Indiana 2010 Monitoring Results and Closing or Advisory Days</b>					
<b>Beach</b>	<b>Tier</b>	<b>Assigned Monitoring Frequency</b>	<b>Total Samples</b>	<b>% of Samples Exceeding State Standards</b>	<b>Closing or Advisory Days</b>
<b>La Porte County</b>					
Duneland Beach Stop 31	3	3/wk	40	13%	11
Duneland Beach Stop 34	3	3/wk	39	8%	6
Indiana Dunes National Lakeshore–Central Avenue Beach	2	1/wk	17	18%	3
Indiana Dunes National Lakeshore–Dunbar Beach	3	1/wk	16	13%	2
<b>La Porte County</b>					
Indiana Dunes National Lakeshore–Mount Baldy	1	1/wk	19	32%	6
Indiana Dunes National Lakeshore–State Park Road/Kemil Avenue Beach	2	1/wk	16	13%	3
Long Beach Stop 20	3	3/wk	39	3%	2
Long Beach Stop 24	3	3/wk	40	3%	1
Michiana Shores Stop 37	3	3/wk	37	3%	3
Sheridan Beach Stop 2	1	3/wk	144	5%	7
Sheridan Beach Stop 7	3	3/wk	48	4%	2
Washington Park Beach	1	daily	321	16%	32
<b>Lake County</b>					
Buffington Harbor Beach	2	5/wk	75	28%	26
Hammond Marina East Beach	2	Daily	98	21%	21
Hammond Marina West Beach	2	Daily	98	10%	10
Jeorse Park Beach I	2	5/wk	75	75%	78
Jeorse Park Beach II	2	5/wk	75	67%	21 (53)*
Lake Street Beach	2	5/wk	160	11%	18
Marquette Park Beach	2	5/wk	320	11%	24
Wells Street Beach	2	5/wk	80	5%	4
Whihala Beach East	1	Daily	104	12%	12
Whihala Beach West	1	Daily	104	20%	21
<b>Porter County</b>					
Broadway Beach	2	5/wk	75	11%	8
Drexwood Beach	2	5/wk	75	7%	5
Indiana Dunes National Lakeshore–Porter Beach	2	1/wk	15	7%	1
Indiana Dunes State Park East Beach	1	Daily	106	21%	19
Indiana Dunes State Park West Beach	1	Daily	106	19%	20
Ogden Dunes Beach	3	4/wk	192	9%	28
Shore Avenue Beach	2	5/wk	75	8%	6

Beach	Tier	Assigned Monitoring Frequency	Total Samples	% of Samples Exceeding State Standards	Closing or Advisory Days
<b>Porter County</b>					
Indiana Dunes National Lakeshore–Lakeview Beach	2	1/wk	19	26%	5
Indiana Dunes National Lakeshore–West Beach	1	1/wk	15	7%	1

\*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 Michelle Caldwell, Indiana Department of Environmental Management. Personal communication.

2 USGS. “About Project S.A.F.E.” [http://www.gls.usgs.gov/main.php?content=research\\_projectSAFE\\_about&title=Project%20S.A.F.E.0&menu=research\\_initiatives\\_projectSAFE](http://www.gls.usgs.gov/main.php?content=research_projectSAFE_about&title=Project%20S.A.F.E.0&menu=research_initiatives_projectSAFE). Accessed June 2011.

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