

# IOWA'S WATER

## Ambient Monitoring Program

### Iowa's Beach Monitoring Program – 2005

Since its inception in 2000, the Beach Monitoring Program in Iowa has worked to protect swimmer health at Iowa's state owned beaches. The ultimate goal of the Beach Monitoring Program is to enhance the public's understanding of the environment, protect swimmer health, and increase enjoyment of Iowa's beaches through comprehensive monitoring and research.

#### Beach Monitoring 2005

**Monitoring.** In 2005, most State Park beaches were monitored weekly between May 15<sup>th</sup> and October 24<sup>th</sup>. Ten state beaches were monitored on a shortened season, ending on Labor Day week, as these beaches have had few, if any, elevated bacteria levels in the first five years of monitoring (Figure 1). Additionally, county and city beaches were sampled between Memorial Day and Labor Day.

**Policy.** In 2005, the policy for issuing advisories at State Park beaches was similar to the one used in 2004. The only major change in 2005 was to the notice signs displayed at beaches. New signs were designed to be visible at the main entrances to the beach (Figure 2).

As in previous years, the beach policy was based on the two water quality standards used in Iowa for recreational waters: a geometric mean and a one-time sample maximum standard. The first standard is used to determine if beaches have chronically high levels of *E.coli* bacteria and is called the geometric mean standard. This standard is based on five samples collected over a 30-day period. "Water Quality Advisory" signs were posted at any beach exceeding Iowa's geometric mean standard for *E.coli* bacteria (126 organisms per 100 ml of water). Additionally, at beaches that have had consistent problems, those classified as "vulnerable" beaches (Figure 1), a second standard, called the one-time sample maximum standard was also used. Any time these beaches had an individual *E.coli* reading above 235 organisms per 100 ml, the "Water Quality Advisory" sign would also be posted.



*Beach at Rock Creek State Park, located in Jasper County.*

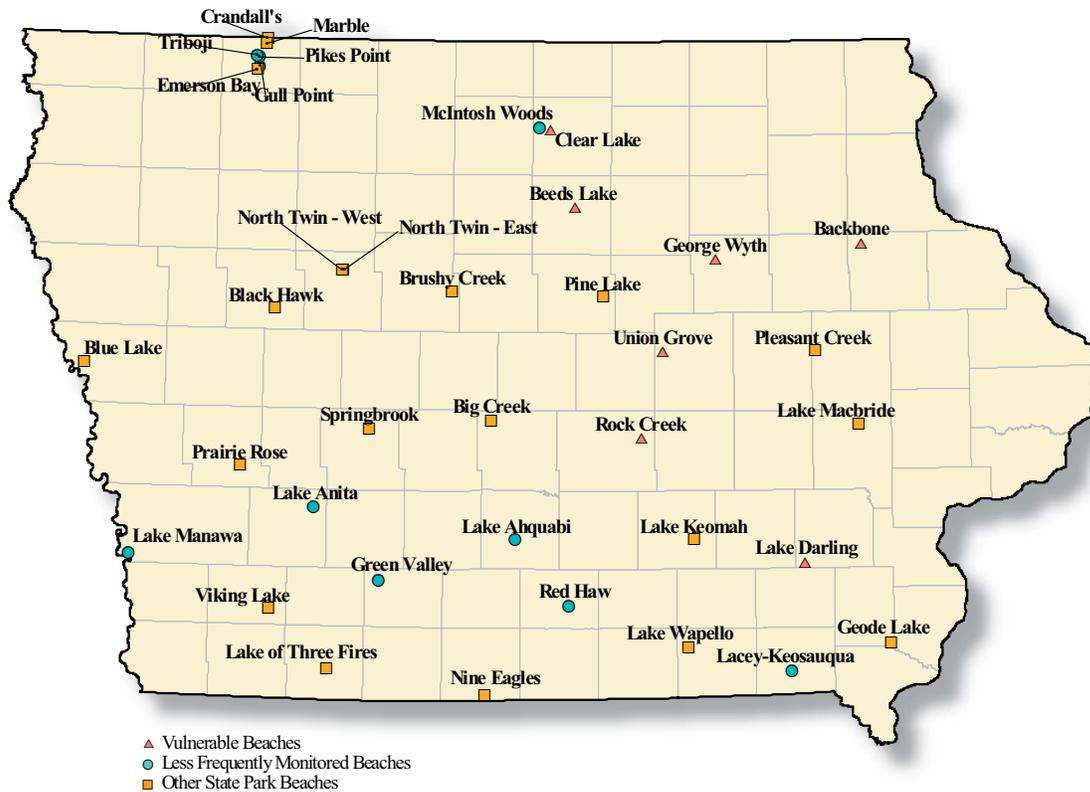
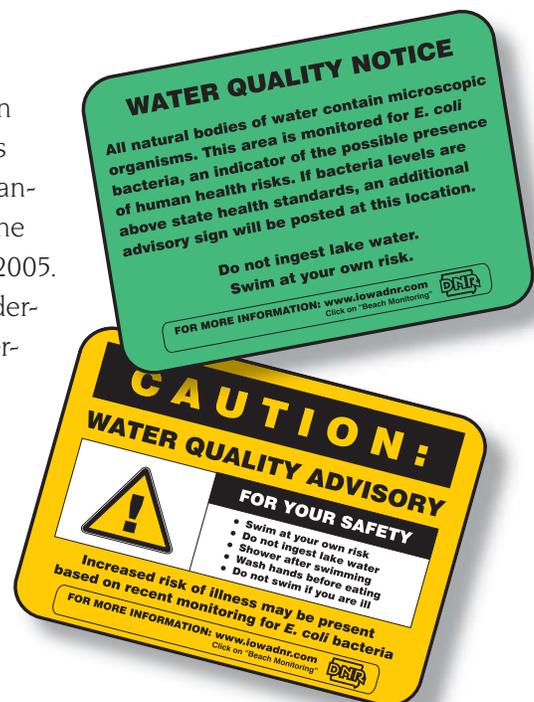


Figure 1. State Park beaches monitored in 2005.

Twenty-nine county and city beaches were monitored as part of Iowa’s Beach Monitoring Program on a voluntary basis in 2005. Just as in 2004, county beaches, with the exception of those located on state-owned property, were given the option of creating their own beach policy or adopting that of the Iowa Department of Natural Resources. Those beaches on state land were subject to the same beach policy used at State Park beaches.

**Results – State-owned beaches.** During the 2005 monitoring season, 11 beaches exceeded the geometric mean standard for *E.coli* (126 organisms per 100 ml) and 25 beaches exceeded the one-time maximum standard for *E.coli* (235 organisms per 100 ml). Insert 1 displays the median and range of the weekly *E.coli* bacteria values for the state-owned beaches in 2005. As in 2000-2004, intensive watershed investigations were undertaken at beaches with chronically high bacteria levels to determine the source(s) of these bacteria.

Figure 2. Beach Signs. Green “Water Quality Notice” signs were displayed at all beaches to give general information regarding beach monitoring. These signs informed beachgoers that the second sign, indicating “Caution,” would be displayed if water quality did not meet recreational guidelines. (Signs adapted from Wisconsin DNR.)



Over the last six years of sampling, Iowa's state-owned beaches have shown weekly fluctuations in bacteria levels. Overall, beaches met or were below the geometric mean standard for *E.coli* 93 percent of the time and met or were below the one-time standard for *E.coli* 92 percent of the time.

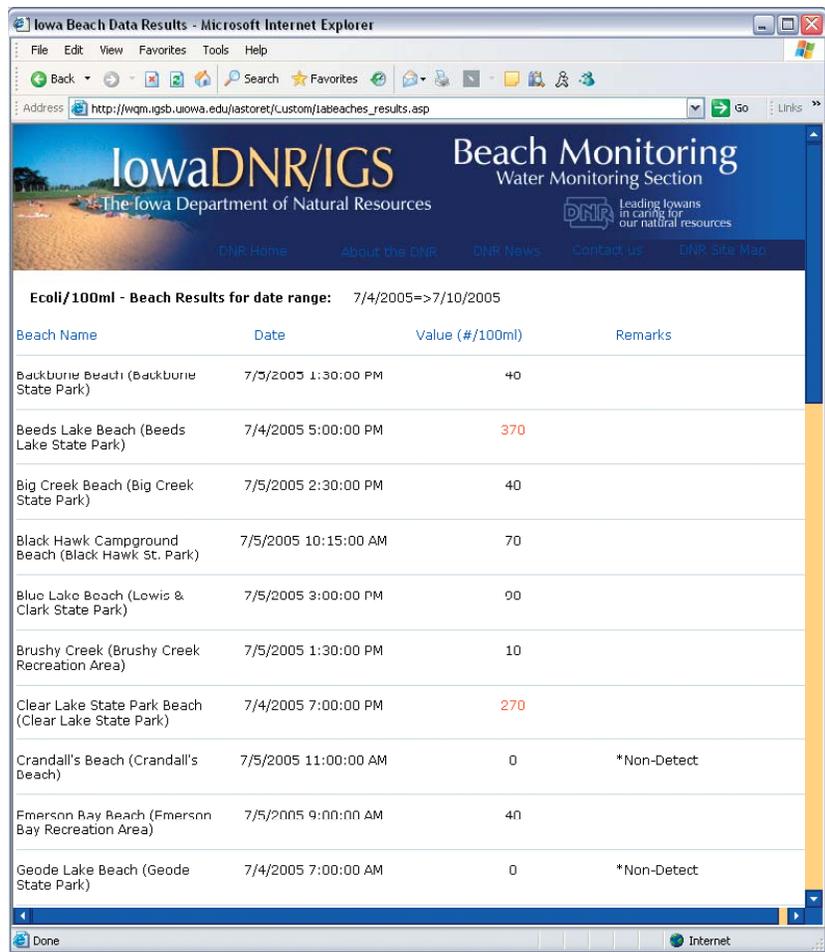
### Results – County beaches.

During the 2005 monitoring season, 5 beaches exceeded the geometric mean standard for *E.coli* (126 organisms per 100 ml) and 15 beaches exceeded the one-time maximum standard for *E.coli* (235 organisms per 100 ml). Insert 2 displays the median and range of the weekly *E.coli* bacteria values for the county and city beaches in 2005.

### Program Updates

In the spring of 2005 a new beaches webpage was unveiled to be available as a "one stop shop" for beach recreation in the state. The website can be viewed by going to [www.iowadnr.com](http://www.iowadnr.com) and clicking on the "Beach Monitoring" link. At this website, visitors can check on the current bacteria levels at state and county owned beaches, as well as historical information for these beaches. They can also browse through publications, find any breaking news regarding beach water quality, or find links to a number of beach related websites.

When visitors first enter the Beach Monitoring webpage, they can view the list of State Park beaches that currently have any warning signs posted, as the list is updated weekly. If you are interested in additional results, simply click on the "See Latest Results" link. Here you will be able to look at the current weekly results by default. By changing the week or year drop down boxes, you are able to view results from any particular week or year of interest. When the results are retrieved, any result above the one time standard is highlighted with red text, while all results below the detection limit of 10 organisms per 100 ml are represented with a zero (Figure 3). Plans are currently underway to also have the site calculate geometric mean results in the same way.



**Figure 3.** Weekly beach monitoring results can be displayed on the new beaches website by clicking on "Beach Monitoring" at [www.iowadnr.com](http://www.iowadnr.com).



## Iowa Beach Study

Current *E.coli* standards for recreational waters in Iowa are based on epidemiological studies conducted by the Environmental Protection Agency in coastal waters. In order to get a better idea of how applicable these standards are in Iowa's impounded waters and to better protect the health of swimmers at Iowa's beaches, a pilot study of beach users at three eastern Iowa beaches was conducted to determine the rates of self-reported gastrointestinal illness or symptoms in swimmers and in non-swimmers. The rates of reported illness were then correlated with bacterial levels in the beach water. A total of approximately 1000 people were recruited at West Overlook

Beach, Sandy Beach (both at the Coralville Reservoir), and at Lake Macbride Beach in Johnson County between June 15 and July 31, 2005. Research staff visited beaches daily to distribute informational flyers, recruit participants, and take water samples. Participants were then enrolled in an online web-based system and submitted health information weekly over a four-week period. University of Iowa College of Public Health personnel are currently evaluating the data for trends associating water quality with swimmer health. Based on the finding of this study, additional research may continue in the summer of 2006.

### Acknowledgements

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Photo on page 1 by Greg Gray, College of Public Health, University of Iowa.

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Iowa Water Monitoring Program Web Site – [wqm.igsb.uiowa.edu](http://wqm.igsb.uiowa.edu)



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