

## Chapter 4

# *Evaluation of Federal, State, and Local Efforts to Implement the BEACH Act*

EPA has been working cooperatively with state and local partners to implement the provisions of the BEACH Act. The extensive efforts described in this chapter have helped reduce human health risks through better monitoring and public notification. In general, state and local agencies have the primary responsibility for conducting beach programs.

The following sections summarize key activities that federal, state, and local governments have been implementing since passage of the BEACH Act.

### 4.1 What has EPA done?

#### *Monitoring and notification performance criteria*

The BEACH Act directed EPA, by April 10, 2002, to publish “performance criteria” for a beach monitoring and notification program. The criteria must address the following:

- The monitoring and assessment of coastal recreation waters adjacent to beaches, or similar points of access that are used by the public, for attainment of water quality standards for pathogens or pathogen indicators, including the use of available methods for such monitoring and assessment.
- Prompt notification of local governments, the public, and the EPA Administrator of exceedances, or the likelihood of any exceedances, of applicable water quality standards for such waters.

To meet the BEACH Act requirement in CWA section 406(a), EPA published the *National Beach Guidance and Required Performance Criteria for Grants* (USEPA 2002a). The document specifies the performance criteria that eligible coastal or Great Lakes state, tribal, or local governments must meet to receive grants to

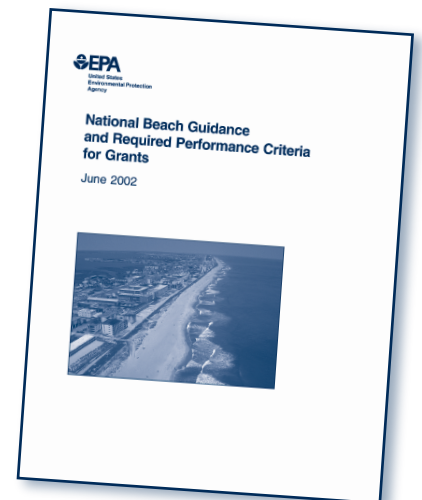
implement coastal recreation water monitoring and public notification programs under the BEACH Act. The 2002 document also provides useful guidance for both coastal and inland beach monitoring and notification

programs. EPA published a notice of availability of the document in the Federal Register (67 FR 47540, July 19, 2002).

In the *National Beach Guidance and Required Performance Criteria* document, EPA put forth nine performance criteria for the implementation of beach monitoring, assessment, and notification programs (Table 4.1). A brief summary of each criterion is provided below.

Chapter 3 of the National Beach Guidance is titled “Beach Evaluation and Classification Process.” It describes the risk-based evaluation steps and information that EPA recommends a state or tribe consider when ranking beaches. There is one general performance criterion for this process as well as five specific requirements. The general requirement is as follows:

1. *Develop risk-based beach evaluation and classification plan.* A state or tribe is required to develop a risk-based beach evaluation and classification plan and to apply it to coastal recreation waters. The plan



**Table 4.1. Summary of BEACH Act Performance Criteria****Evaluation and Classification**

1. Develop risk-based beach evaluation and classification plan

**Monitoring**

2. Develop tiered monitoring plan
3. Monitoring report submission and delegation
4. Methods and assessment procedures

**Public Notification and Prompt Risk Communication**

5. Public notification and risk communication plan
6. Measures to notify EPA and local governments
7. Measures to notify the public
8. Notification report submission and delegation

**Public Evaluation**

9. Public evaluation of program

must describe the factors used in its evaluation and classification process and explain how coastal recreation waters are ranked as a result of the process. This process would yield a list of coastal recreation waters, including coastal recreation waters adjacent to beaches or similar points of access used by the public.

Chapter 4, “Beach Monitoring and Assessment”, describes three general performance criteria and several specific requirements. It also provides additional technical guidance for beach monitoring programs. The general requirements are the following:

2. *Develop tiered monitoring plan.* Development of a tiered monitoring plan is required. The plan must adequately address the frequency and location of monitoring and assessment of coastal recreation waters based on the periods of recreational use of the waters, the nature and extent of use during certain periods, the proximity of the waters to known point sources and nonpoint sources of pollution, and any effect storm events have on the waters.
3. *Monitoring report submission and delegation.* States, tribes, and local governments are required to develop a mechanism to collect and report their monitoring data in timely reports and, for states, to document any delegation of monitoring responsibilities that might have been made to local governments. States,

tribes, and local governments must report their monitoring data to the public, EPA, and other agencies in a timely manner. States are encouraged to coordinate closely with local governments to ensure that monitoring information is submitted in a consistent manner. If monitoring responsibilities are delegated to local governments, the state grant recipient must describe the process by which the state may delegate such responsibilities to local governments.

4. *Methods and assessment procedures.* Detailed methods and assessment procedures must be developed. States, tribes, or local governments must adequately address and submit to EPA methods for detecting levels of pathogens and pathogen indicators in coastal recreation areas. They must also provide documentation to support the validity of methods other than those currently recommended or approved by EPA. In addition, they must identify and submit to EPA assessment procedures for identifying short-term increases in pathogens and pathogen indicators in coastal recreation areas.

Chapter 5 of the guidance document, “Public Notification and Prompt Risk Communication,” describes the performance criteria and technical guidance for these aspects of a beach program. The performance criteria below describe the four general requirements for an overall beach notification and risk communication plan:

5. *Public notification and risk communication plan.* The state, tribe, or local government must develop an overall public notification and risk communication plan. The plan must describe the state’s, tribe’s, or local government’s public notification efforts and measures to inform the public of the potential risks associated with water contact activities in the coastal recreation waters that do not meet applicable water quality standards.
6. *Measures to notify EPA and local governments.* The state, tribe, or local government must adequately identify measures for prompt communication of the occurrence, nature of, location, pollutants involved, and extent of any exceeding of, or likelihood of exceeding, applicable water quality standards for pathogens and pathogen indicators. They must identify how this information will be promptly

communicated to EPA. States also must identify how this information will be promptly communicated to a designated official of the local government for the area adjoining the coastal recreation waters for which the failure to meet applicable standards is identified.

7. *Measures to notify the public.* A state, tribe, or local government program must adequately address the posting of signs at beaches or similar points of access, or functionally equivalent communication measures, that are sufficient to give notice to the public that the coastal recreation waters are not meeting or are not expected to meet applicable water quality standards for pathogens and pathogen indicators.
8. *Notification report submission and delegation.* States, tribes, and local governments must compile their notification plans in timely reports. States must describe any delegation of notification responsibilities that has been made, or that the state intends to make, to local governments.

Chapter 2, “Public Evaluation of Program,” explains the last criterion:

9. *Public evaluation of program.* Provide the public with an opportunity to review the program through public notice, review, and opportunity to comment.

### Cooperative consultation process

EPA developed the *National Beach Guidance and Performance Criteria* document through a cooperative consultation process with a wide variety of agencies and interested parties. As a first step in this process, EPA hosted several regional workshops to identify preliminary concepts and gather specific recommendations from various parties. EPA then worked with an external group composed of representatives from state and local environmental and health agencies, as well as various environmental groups. This external group provided much valuable input to the document. EPA developed a draft guidance document that reflected many of the concepts and recommendations suggested by the review groups.

EPA published the draft document on July 31, 2001, and provided a 60-day comment period that closed on



October 1, 2001. During the comment period, EPA hosted five public forums throughout the United States to discuss the draft. The final document incorporated responses to those comments obtained through the forums and other comments that EPA had received. Following publication of the performance criteria and before the award of the first implementation grants, EPA conducted five regional technical assistance workshops to help eligible states and territories develop their monitoring and notification programs.

### Program development and implementation grants

The BEACH Act authorizes EPA to make grants to coastal and Great Lakes states, territories, tribes, and, in certain circumstances, local governments to develop and implement monitoring and notification programs. EPA may award implementation grants to states only if

- The program is consistent with EPA’s performance criteria.
- The state (or local government) prioritizes the use of grant funds on the basis of use of the water and risk to human health, and identifies to EPA the factors considered in prioritizing the use of funds.

- The state (or local government) develops a list of discrete areas of coastal recreation waters that are subject to the program for monitoring and notification for which the grant is provided and specifies any coastal recreation waters for which fiscal constraints will prevent consistency with the performance criteria
- The state (or local government) provides an opportunity for the public to review the program through a process that provides for public notice and an opportunity for the public to comment.

Since passage of the BEACH Act, EPA has awarded approximately \$52 million of grant funds authorized under CWA section 406(b) to all 35 eligible coastal and Great Lakes states and territories to support the implementation of coastal recreation water monitoring and public notification programs that are consistent with EPA's required performance criteria for grants (Table 4.2). States are using the grant funds to implement beach monitoring and notification programs that are consistent with national guidance. The activities include

- Collecting and analyzing water samples to determine whether they exceed, or are likely to exceed, water quality standards for public health protection
- Notifying the public if water quality standards are exceeded or are likely to be exceeded
- Maintaining databases of beach water quality and advisory information

EPA has awarded grants to all eligible states that applied for funding, using an allocation formula that



the Agency developed for allocating BEACH Act grant funds in 2002. EPA consulted with various states and other stakeholders to develop this formula. The formula uses three factors—beach season length, beach miles, and beach usage. Because the data for beach miles and beach usage were not readily available, shoreline length and coastal population were used as surrogates.

### *EPA's eBeaches: Information technology development for beaches*

Section 406(e) of the CWA, as amended by the BEACH Act, directs EPA to establish, maintain, and make available to the public, by electronic and other means, a national coastal recreation water pollution occurrence database that provides the following:

- The data reported to the Administrator under subsections (b)(3)(A)(i) and (d)(3)
- Other information concerning pathogens and pathogen indicators in coastal recreation waters that
  - is made available to the Administrator by a state or local government from a coastal water quality monitoring program of the state or local government
  - the Administrator determines should be included

EPA is designing, building, and implementing an electronic system to support the BEACH Act requirements. The result is a new online system called eBeaches. The system provides for the fast, easy, and secure transmittal of information about beach water quality, and it improves public access to information about beach conditions and health risks associated with swimming in polluted water. The eBeaches system saves time and money by enabling electronic transactions and eliminating paper forms and outdated methods of data entry. The system also offers a secure electronic environment for fast, easy click-and-send reporting.

eBeaches receives beach water quality, swimming advisory, and monitoring program data from the states through EPA's Central Data Exchange (CDX), the central receiving point for environmental data submissions to the Agency and a cornerstone of EPA's e-government initiative. CDX provides built-in data quality checks,

**Table 4.2. Annual BEACH Act Grants Awards**

State/Territory	2001	2002	2003	2004	2005	2006	Total
Alabama	\$58,683	\$263,142	\$261,514	\$262,810	\$262,650	\$262,170	\$1,370,969
Alaska	\$61,153	\$150,000	\$149,025	\$150,000	\$150,000	\$150,000	\$810,178
American Samoa	N/A	\$302,288	\$300,364	\$302,260	\$302,230	\$302,140	\$1,509,282
California	\$57,000	\$535,643	\$532,164	\$527,850	\$525,460	\$516,960	\$2,695,077
Connecticut	\$58,694	\$226,389	\$223,921	\$224,560	\$224,290	\$223,370	\$1,181,224
Delaware	\$58,694	\$211,339	\$210,299	\$211,300	\$211,170	\$210,750	\$1,113,552
Florida	\$58,683	\$530,893	\$544,552	\$540,220	\$537,390	\$528,410	\$2,740,148
Georgia	\$58,683	\$288,490	\$287,442	\$288,130	\$287,620	\$286,200	\$1,496,565
Guam	N/A	\$302,775	\$300,860	\$302,740	\$302,710	\$302,600	\$1,511,685
Hawaii	\$57,000	\$325,149	\$322,897	\$324,230	\$323,930	\$323,020	\$1,676,226
Illinois	\$58,694	\$248,615	\$245,043	\$245,060	\$244,630	\$242,940	\$1,284,982
Indiana	\$58,694	\$206,670	\$204,963	\$206,090	\$206,030	\$205,800	\$1,088,247
Louisiana	\$58,650	\$383,287	\$380,052	\$328,520	\$326,780	\$322,010	\$1,799,299
Maine	\$58,675	\$259,742	\$257,766	\$257,650	\$256,880	\$254,730	\$1,345,443
Maryland	\$58,694	\$276,068	\$273,429	\$272,860	\$271,970	\$269,250	\$1,422,271
Massachusetts	\$58,675	\$260,691	\$257,453	\$257,220	\$256,580	\$254,440	\$1,345,059
Michigan	\$0	\$287,556	\$283,360	\$282,520	\$281,530	\$278,450	\$1,413,416
Minnesota	\$58,694	\$204,631	\$203,309	\$204,490	\$204,440	\$204,270	\$1,079,834
Mississippi	\$58,683	\$258,028	\$256,481	\$257,900	\$257,810	\$257,510	\$1,346,412
New Hampshire	\$58,675	\$204,918	\$203,594	\$204,770	\$204,710	\$204,530	\$1,081,197
New Jersey	\$58,694	\$285,719	\$282,586	\$281,680	\$280,780	\$277,730	\$1,467,189
New York	\$57,000	\$366,030	\$359,215	\$356,240	\$354,580	\$348,740	\$1,841,805
North Carolina	\$58,683	\$306,721	\$305,007	\$305,280	\$304,540	\$302,480	\$1,582,711
Northern Mariana	N/A	\$303,462	\$301,648	\$303,510	\$303,470	\$303,330	\$1,515,420
Ohio	\$58,694	\$227,879	\$224,227	\$224,840	\$224,580	\$223,650	\$1,183,870
Oregon	\$54,888	\$230,342	\$229,757	\$230,290	\$229,910	\$228,780	\$1,203,967
Pennsylvania	\$58,694	\$226,953	\$223,012	\$223,650	\$223,410	\$222,530	\$1,178,249
Puerto Rico	\$58,694	\$335,862	\$328,757	\$329,900	\$329,570	\$328,450	\$1,711,233
Rhode Island	\$58,675	\$214,225	\$212,340	\$213,290	\$213,140	\$212,640	\$1,124,310
South Carolina	\$57,143	\$300,253	\$298,726	\$299,140	\$298,490	\$296,660	\$1,550,412
Texas	\$58,650	\$387,957	\$387,508	\$387,190	\$386,150	\$382,890	\$1,990,345
U.S. Virgin Islands	\$58,694	\$303,488	\$301,483	\$303,350	\$303,310	\$303,180	\$1,573,505
Virginia	\$58,694	\$282,355	\$281,693	\$280,910	\$279,920	\$276,900	\$1,460,472
Washington	\$59,959	\$274,034	\$274,585	\$273,980	\$273,080	\$270,320	\$1,425,958
Wisconsin	\$58,694	\$228,396	\$225,970	\$226,570	\$226,260	\$225,270	\$1,191,160
<b>Totals</b>	<b>\$1,812,580</b>	<b>\$9,999,990</b>	<b>\$9,935,002</b>	<b>\$9,891,000<sup>a</sup></b>	<b>\$9,870,000<sup>a</sup></b>	<b>\$9,803,100</b>	<b>\$51,311,672</b>

<sup>a</sup> EPA set aside an additional \$50,000 for eligible tribes in 2004 and 2005. No eligible tribes, however, applied for BEACH Act grants during either year.

Web forms, standard file formats, and a common, user-friendly approach to reporting environmental data. Once CDX receives the beach water quality data, the data are transmitted to, and stored in, the Office of Water's STORET system, a repository for water quality, biological, and physical data. Local beach program and advisory data are stored in the Office of Water's PProgram tracking, beach Advisories, Water quality standards, and Nutrients (PRAWN) data system. Beach Map coordinates are stored in the Office of Water's Watershed Assessment, Tracking, and Environmental Results System (WATERS). Seamless user-friendly access to data in all of these systems is available to the public through an Internet application named BEACON (Figure 4.1).

eBeaches also allows state and local agencies to instantaneously create, edit, and display maps of the beaches they are monitoring. Using a tool called Web-based Reach Indexing (WebRIT), states or local agencies can make and edit maps available to the public on the Internet.

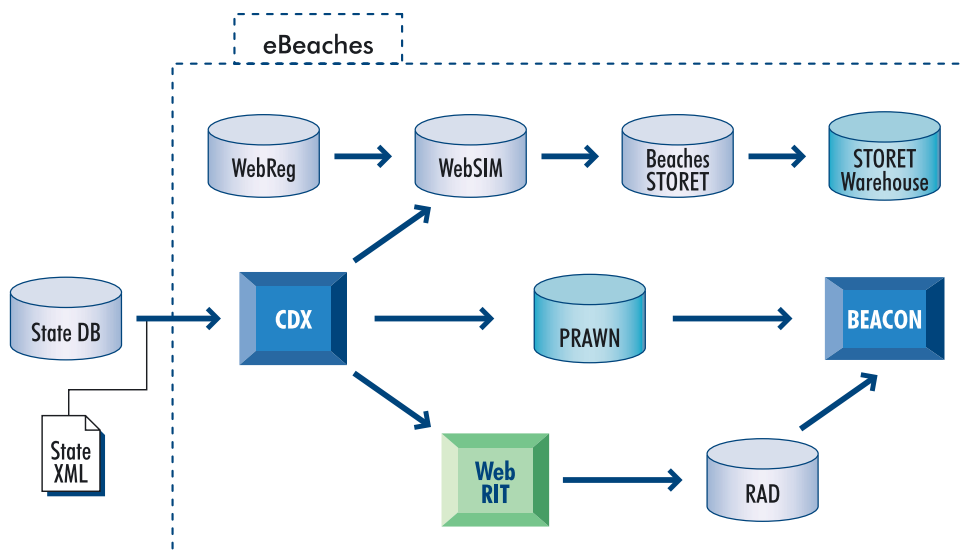
In 2002 EPA drafted a plan on how to meet its BEACH Act requirements to collect, store, and maintain state beach data and display the data for the public. The plan outlined a new approach for data collection within the Agency and for states using standardized file formats

(XML files), secure electronic data reporting (CDX), data conversion interfaces (WebSIM), relational databases (PRAWN, STORET), and an Internet application (BEACON). This new approach has been challenging for both EPA and states to develop and implement.

The electronic data reporting has required new policy on data security, data ownership, data sharing, and data reporting. It has introduced new technical concepts and capabilities for beach program managers to learn and implement. It requires a new task for constant maintenance of the system hardware and software in areas such as version upgrades, data compatibility, and system connectivity. As a result, EPA's system has experienced periods of down time when states were unable to submit their data. Eventually, these maintenance periods will be planned maintenance events rather than episodic events.

Initially, all states did not have the trained staff, funding, or technological resources to build and maintain their data systems. EPA expects that data reporting will become easier for states as they further develop their systems. The Agency is providing continued support to assist states with their data-reporting work.

eBeaches is also part of the Agency's Environmental Information Exchange Network. The Exchange



**Figure 4.1.** The framework of e-Beaches allows seamless user-friendly access of data through the Internet

Network is a new approach for exchanging environmental data electronically between EPA, states, and other partners using network nodes. The Exchange Network provides improved data quality, better data integration, and improved availability of environmental data. To share data on the Exchange Network, the data must be formatted to common data standards and the state must have an operating node. EPA has been working with states to develop their ability to use this system. States are beginning to use this technology to submit beach advisory data to PRAWN. EPA is developing the technology to allow beach water quality data submissions over the Exchange Network.

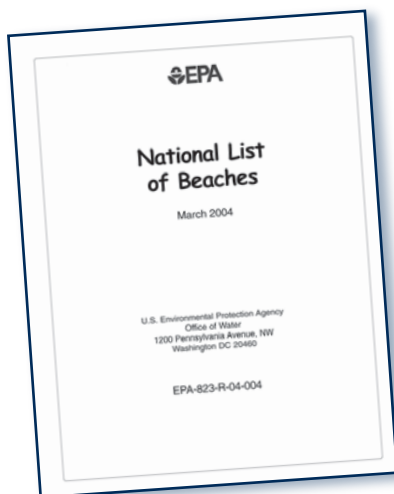
In summary, EPA has improved public access to data on beach advisories and closings by improving its electronic system for beach data collection and delivery systems; the system is known as “eBeaches.” This online system includes a database of monitoring results and notification actions, thereby fulfilling the National Pollution Occurrence Database requirement of the BEACH Act. The public can view the beach information at [http://oaspub.epa.gov/beacon/beacon\\_national\\_page.main](http://oaspub.epa.gov/beacon/beacon_national_page.main).

### National List of Beaches

Section 406(g) of the CWA, as amended by the BEACH Act, directs EPA to maintain a publicly available list of waters that are subject to a monitoring and notification program, as well as those not subject to a program. As a BEACH Act grant condition, states and territories developed their lists of beaches, identified whether there is a monitoring program for each beach, and submitted

this information to EPA. EPA compiled the submissions into the *National List of Beaches* and published the list in the *Federal Register* on May 4, 2004 (69 FR 24597).

The *National List of Beaches* provides a national picture of the extent of



For more information about BEACON visit EPA at: [http://oaspub.epa.gov/beacon/beacon\\_national\\_page.main](http://oaspub.epa.gov/beacon/beacon_national_page.main)



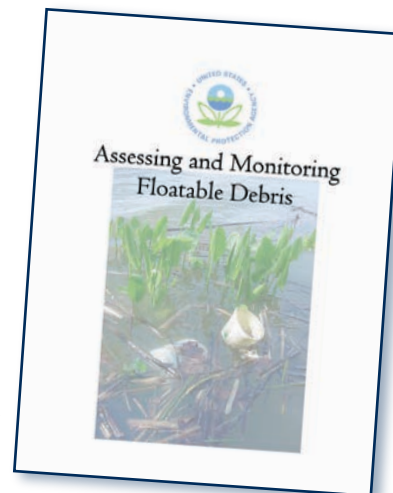
For EPA Exchange Network information visit: <http://www.epa.gov/water/waterplan>

beach water quality monitoring. The list identified 6,098 beaches, of which 58 percent are monitored. This is a significant increase from the 1,969 beaches of coastal recreation waters that states and territories had reported to EPA as part of the voluntary National Beach Survey. The number of beaches has increased because of BEACH Act grant support. These grants helped improve state oversight and coordination and allowed a more comprehensive inventory of beaches and monitoring locations. EPA will update this list periodically as new information becomes available from states and territories.

### “Floatables”: EPA Technical Assistance

To protect public health and safety in coastal recreation waters, section 406(f) of the CWA, as amended by the BEACH Act, directs EPA to provide technical assistance for developing assessment and monitoring procedures for floatable materials. In August 2002 EPA published guidance titled *Assessing and Monitoring Floatable Debris*.

The guidance provides examples of monitoring and assessment programs that have been established in the United States to address the impact of floatable debris, examples of mitigation activities to address floatable debris, and contact information.



## EPA Implementation

Section 406(h) of the CWA, as amended by the BEACH Act, requires EPA, for a state that has not developed a program consistent with EPA's performance criteria, to conduct a monitoring and notification program, using grant funds that otherwise would have been awarded to the state. This "backstop" requirement is not triggered until at least three years after EPA lists waters in such states under CWA section 406(g). Because EPA listed the waters on April 12, 2004, under section 406(g) EPA is not yet authorized to implement the program in any state or territory.

## 4.2 What have other federal agencies done?

Section 406(d) of the CWA, as amended by the BEACH Act, requires federal agencies to develop programs for coastal recreation waters adjacent to beaches or similar points of access within federal jurisdiction by October 10, 2003. These programs should be designed to protect public health and safety, meet EPA's performance criteria, and address certain other matters required for state and local programs.

### U.S. National Park Service

The U.S. National Park Service (NPS) oversees a number of beaches in National Parks throughout the United States. Public health for NPS is overseen by the Office of Public Health, a part of the Visitor and Resource Protection Directorate in Washington, DC. This office develops the applicable public health guidance, and primarily members of the U.S. Public Health Service staff it.

The applicable NPS guidance and regulations govern activities at recreational waters in the parks. Specifically, *Director's Orders 83* is the governing document that describes the Public Health Program's expectations of park managers. The requirements in it are in keeping with the requirements set forth in *Management Policies 2001* of the NPS, Ground Penetrating Radar (GPR) Act requirements, and the NPS Strategic Plan.

The responsibility for administering the parks and implementing day-to-day activities rests with the regional NPS offices. In some cases recreational waters

are monitored by state or county authorities; in others the responsibility falls on park management. The NPS guidance for conducting recreational water quality assessments is in the following reference manuals: *Reference Manual 83(D1)* for bathing beaches, *Reference Manual 83(D2)* for swimming pools, and *Reference Manual 83(D3)* for hot tubs and spas.

Discussed below are some specific beaches administered by NPS.

- *NPS Pacific West Region.* There are several designated public bathing beaches throughout Golden Gate National Recreation Area in San Francisco and Marin County. San Francisco beaches are Baker Beach, China Beach, Ocean Beach (north and south), Fort Funston, Crissey Field, and Aquatic Park. Marin County beaches are Stinson Beach, Rodeo Beach, Muir Beach, Kirby Cove, Black Sand Beach, Tennessee Valley Beach, and Horseshoe Cove.

All the beaches are open year-round, but they are used more frequently in the summer. San Francisco's Bureau of Environmental Health monitors the water quality at park beaches in the city. Most of the San Francisco beaches are sampled once a week year-round for total coliforms, *E. coli*, and enterococcus. Additional monitoring is conducted whenever a CSO occurs from the city's sewer system. Test results are provided to the park only when there are positive samples. In accordance with state requirements, monitoring is coordinated in Marin County by the County of Marin Environmental Health Services. When there are positive test results, the park posts the beaches with approved signage. The park works with the county to determine the possible source(s) of contamination.

- *NPS Northeast and National Capitol Regions.* NPS staff monitored the presence of bacterial indicators of fecal contamination at six ocean beach locations within Assateague Island National Seashore weekly from May 23 to September 6, 2005. Using guidelines developed by EPA, water samples were collected from high-use public bathing beaches and analyzed for the presence of enterococci bacteria. Assay results were compared weekly to EPA-recommended numeric standards and used to assess risk to swimmer health from contaminants.



Sample results ranged from less than 10 to 64 most probable number (MPN) of colonies of enterococci bacteria per 100 mL, and all results were within the range of values considered indicative of safe conditions for water contact. Assateague Island National Seashore contracts with an EPA-approved laboratory (State of Maryland Department of Health and Mental Hygiene) to analyze water samples using the EPA-approved Enterolert analytical method to cut response time, travel time, and analytical costs. Results from this monitoring program are shared with Worcester County and the State of Maryland.

- *NPS Midwest Region.* At Indiana Dunes National Lakeshore (INDU), the park monitors its beaches daily and has occasionally closed them if *E. coli* reaches 235 colonies/100 mL. This typically happens after a heavy rainfall event. EPA helped INDU with monitoring procedures last year and helped fund studies for the park.
- *NPS Intermountain Region.* Padre Island National Seashore has two monitored beaches. One beach, Malaquite, is on the Gulf side of the island; the other, Bird Island, is on the lagoon side. The park uses Texas A&M University at Corpus Christi for collection and analysis.
- Historically, there have been some water quality issues of unknown origin. In 2003, 2,030 enterococci

colonies/100 mL were reported from one sample. However, in 2005, all results have indicated low levels of bacteria with no beach closures posted. The park has not yet been able to determine why these variations have occurred, but it is possible that variables include hot, dry weather (no runoff) and the fact that construction has caused visitation to decrease.

### 4.3 What have state and territorial governments done?

As of the date of this report, 34 of the 35 eligible states and territories have developed and are implementing a beach monitoring and notification program consistent with the requirements of the *National Beach Guidance and Required Performance Criteria for Grants*. By doing so, these 34 states meet the requirements of the BEACH Act. The remaining state, Alaska, is in the process of developing a program.

The following sections were written by each state or territory to highlight the key accomplishments of beach programs in coastal states and territories. EPA has not verified and validated these data. These program descriptions describe recent activities and might include some actions not funded by BEACH Act funds. Readers should note that the summaries for the Gulf Coast area were written before hurricanes Katrina and Rita. These



Padre Island  
National Seashore

devastating events, which occurred in August and September 2005, will likely have a profound effect on the beach programs administered by the affected states in the short term.

### Alabama

In June 1999 the Alabama Department of Environmental Management (ADEM), in cooperation with the Alabama Department of Public Health (ADPH), initiated a program to routinely monitor bacteria levels at five public recreational beaches along the Gulf Coast. The effort was later expanded to include six additional sites along the Gulf Coast and Mobile Bay. When the BEACH Act was signed into law in 2000, ADEM was designated as the state's lead agency and was awarded grant money to carry out the monitoring program. Through the BEACH Act, ADEM and ADPH expanded and enhanced monitoring and notification efforts for Alabama's public recreational waters. The goal of this program is to increase public awareness and provide water quality information to help the public make more informed decisions concerning their recreational use of Alabama's natural coastal waters.

- *Monitoring.* The monitoring program now involves the routine collection of water samples from 25 high-use or potentially high-risk public recreational sites from Perdido Bay to Dauphin Island. The selection of sites and the frequency of sampling have been determined using a risk-based evaluation and ranking process. This process considers a number of factors for a given site, most important the amount of use and the amount of risk. Depending on the site rankings, samples are collected twice a week, once a week, or once every other week during the swimming season (June through September) and once a month during the cooler months (October through May).

Samples are analyzed for the indicator bacteria, enterococci. The indicator bacteria used and the threshold concentration, which triggers an advisory, are part of the state water quality standards, which are derived from EPA's recommended *Ambient Water Quality Criteria for Bacteria* (1986) and *Water Quality Standards Handbook* 2<sup>nd</sup> edition (1983). All enterococci analyses are performed by ADPH Laboratory using EPA Method 1600. Trained ADEM and ADPH staff collected samples from the sites.

In addition, ADEM and ADPH staffs use YSI Environmental Monitoring Systems to collect in situ data of dissolved oxygen, pH, specific conductivity, salinity, and temperature. Turbidity is also collected using a field turbidity meter.

- *Public notification.* ADPH reviews all data and is responsible for issuing any advisories. All test results are posted on the ADEM Web site ([www.adem.state.al.us/FieldOps/Monitoring/BeachMonitoring.htm](http://www.adem.state.al.us/FieldOps/Monitoring/BeachMonitoring.htm)), along with the in situ data, and advisories are publicized through press releases and posted on signs at each of the 25 sampling locations. Over 3,000 samples have been collected since the inception of the Beach Program, resulting in 52 advisories issued by the ADPH. During fiscal year 2004, over 800 samples were collected and analyzed, resulting in 15 beach advisories issued by ADPH.

### Alaska

Alaska has 36,000 miles of coastal waters, which to a large extent are undeveloped, although a great deal of recreation occurs on Alaska's beaches throughout the year. The Alaska Department of Environmental Conservation, Division of Water, Water Quality Monitoring & Assessment Program, administers the BEACH Act grant program for the state. BEACH Act grant-funded work conducted since 2001 has established the statewide extent of beaches used for recreational purposes, the degree of use, and the proximity of pollution sources to the beaches. Visit [www.dec.state.ak.us/water/wqsar/wqs/beachprogram.htm](http://www.dec.state.ak.us/water/wqsar/wqs/beachprogram.htm) for more information.

Further work through the BEACH Act grants will result in the development of standardized monitoring and notification procedures for Alaska's coastal recreational waters where necessary, pilot and ongoing monitoring of high-risk beaches, parallel testing of fecal coliforms and enterococci, and analysis of results of testing for bacteria after various holding times.

- *Beach survey and risk-based beach ranking.* Alaska conducted a survey of coastal communities to identify where beaches were used for recreational purposes and what pollution sources might contribute to health issues at the beaches. The state used the survey results to develop a ranked list of

identified beaches to prioritize where monitoring efforts should be focused.

Field sampling that occurred in summer 2005 revealed contamination issues at a beach near Juneau, but only during high tide. Source tracking commenced; local septic systems and an adjacent boat harbor were of particular interest.

- *Public notification.* Alaska developed a Notification and Risk Communication Plan that contains extensive guidelines for how to conduct a monitoring program, report the results to communities, and notify them if closings are necessary. The state conducted workshops in 2004 in communities with identified high-risk beaches, resulting in revisions to the notification procedures. Alaska will use the refined procedures during the coming season if monitoring results indicate the need for public notification.

### American Samoa

American Samoa is surrounded by approximately 143 miles of beaches. Residents and tourists of American Samoa use all of the 143 miles of beaches for swimming and family subsistence fishing. The American Samoa Environmental Protection Agency (ASEPA) administers the Coastal Recreation Water Monitoring and Notification Program for the territory under the BEACH Act, and it conducts all monitoring and public notification for these beaches. Based on monitoring done in FY 2004, ASEPA determined that for swimming use support 56 miles are impaired, 27 miles fully support this designated use, and 60 miles are likely supporting this designated use but lack sufficient data.

- *Monitoring.* Since the monitoring and notification program was implemented in FY 2002, ASEPA has added 14 new beach sites to the program. ASEPA also increased the frequency of monitoring and public notification for 16 beach sites from once every 3 months to once a week.
- *Public notification.* Public advisories are issued each week in print, radio, and television media for all beach samples that exceed the American Samoa Water Quality Standards for enterococci. The

number of public inquiries received by ASEPA from residents, tourists, and community groups (e.g., EnviroCamp Tifitifi, American Samoa Swimming Association, American Samoa National Olympic Committee) about weekly advisories has steadily increased since FY 2002, indicating the success of the public notification program in informing the community, raising awareness, and protecting public health.

### California

California has one of the most extensive beach monitoring programs in the country. County health agencies in 18 different coastal counties, National Pollutant Discharge Elimination System (NPDES) permittees that discharge to the coastal zone, environmental groups, and numerous citizen monitoring groups perform beach monitoring. The BEACH program is helping California turn these programs into a coordinated statewide program.

- *Public notification.* EPA BEACH Act grant funds have been used to help develop and support electronic data submission from the coastal counties to the state's Beach Watch System and to EPA. The state's Beach Water Quality Work Group has worked with Heal-the-Bay, a Southern California environmental organization, to modify the grading system for the Beach Report Card, which provides weekly updates on the status of 430 beaches statewide ([www.healthebay.org/brc/statemap.asp](http://www.healthebay.org/brc/statemap.asp)).
- *Pollution removal and future research.* California has invested \$78 million in a Clean Beach Initiative to



clean up bacterial contamination throughout the state. The state has also funded research to develop more rapid detection of indicators, better methods for tracking contamination sources, and epidemiological studies to better understand the relationship between bacterial indicators and diseases.

### Connecticut

Connecticut has state, municipal, and private beaches along its shoreline with Long Island Sound. Two of the most popular beaches are New London's Ocean Beach Park and Rocky Neck State Park, which are both EPA–New England–designated “Flagship Beaches.” Visit the Web site <http://dep.state.ct.us/updates/beach/wtrqual.asp> for more information.

The Connecticut Department of Public Health (DPH) manages the BEACH Act grant, which funds courier service to deliver locally collected beach water samples to the DPH state laboratory in Hartford for analysis. The grant also funds other beach-related activities including hosting two annual technical meetings for municipal and state beach officials; collecting and managing laboratory test results for municipal beaches along the shoreline; managing the annual Beach Survey; and reporting monitoring and notification data to EPA. Connecticut has received \$957,854 in BEACH Act grants since 2000. Visit the Web site <http://dep.state.ct.us/updates/beach/wtrqual.asp> for more information.

- *Risk-based beach ranking.* DPH uses a risk-based approach to monitor high-priority beaches. Through two annual meetings and ongoing consultation with municipal and state park beach contacts, the program is committed to communicating with the local communities along the shoreline.
- *Monitoring.* The DPH state laboratory analyzes more than 1,000 samples every summer for Connecticut's municipal and state park beaches along the shoreline. The laboratory quickly reports exceedances to the affected community.

Local health authorities often preemptively close their beaches as a rapid response public health measure when historical data show there is a high likelihood of elevated bacteria counts after high rainfall events.

### Delaware

More than 6.1 million beach-going tourist trips are made to Delaware each year. Delaware's swimming beaches have been sampled since 1979. The state implemented a revised and formalized Recreational Water Program in 1989. This program has grown further under the BEACH Act. Approximately 50 miles of coastline are now monitored, from Slaughter Beach, on the Delaware Bay, south to the State Line at Fenwick Island, Delaware/Ocean City, Maryland. In addition, a number of freshwater ponds are monitored.

Visit the Web site [www.dnrec.state.de.us/dnreceis/Div\\_Water/Apps/RecWater/Asp/RecWaterPublic.asp](http://www.dnrec.state.de.us/dnreceis/Div_Water/Apps/RecWater/Asp/RecWaterPublic.asp) for more information.

- *Monitoring.* Delaware uses the total enterococci standards recommended by EPA and employs a preemptive rainfall advisory system for the freshwater ponds covered under the program. Delaware conducts sampling at areas covered under the program from the second Monday in May to the second Monday in September. In addition, temperature, salinity, dissolved oxygen, and pH data are also collected weekly at marine sites.

### Florida

Florida has numerous important beaches, including such popular destinations as Miami Beach, Fort Lauderdale, Daytona Beach, Key West, and Panama City Beach. The Florida Department of Health administers the Beach Monitoring Program in conjunction with the county health departments and they conduct and oversee monitoring and public notification on approximately 580 miles of beaches. They have received \$1,674,348 in BEACH Act grants since 2000.

- *Monitoring.* In August 2000 the beach water sampling program included 34 of Florida's coastal counties through state legislation (Senate Bill 1412 and House Bill 2145) and funding. This funding allowed for biweekly sampling at just over 300 sites throughout the state. Testing under this program included fecal coliforms as well as enterococci bacteria. The choice of these two indicator bacteria was based on the water quality standards adopted by the Florida Department of Environmental Protection (DEP) for

fecal coliforms and the recommended standards of EPA for enterococcus. In August 2002 DEP began collecting water samples weekly with additional funding from EPA. With the increased sampling frequency, the use of enterococcus geometric means became possible. Since that point, advisories have been based on bacteria levels that exceed either the single sample maximum standards for enterococcus or fecal coliforms or the geometric mean standard for enterococcus.

- *Public notification.* The state delegated authority to county health departments to conduct the sampling and issue health advisories for areas that exceed these standards. The public is then notified through a Web site (<http://setappsdoeh/irm00beachwater/default.aspx>), local media, and signs posted at the access points to the swimming area.

### Georgia

Georgia has numerous important beaches, including such popular destinations as St. Simon's Island, Jekyll Island, and Tybee Island. The Georgia Department of Natural Resources administers the Beach Monitoring Program in conjunction with county and local governments, and they conduct and oversee monitoring and public notification on approximately 118 miles of beaches. They have received \$922,745 in BEACH grants since 2000.

- *Public outreach.* The Georgia Department of Public Health and Department of Natural Resources developed a flier with frequently asked questions. The flier, featuring the "Peach on the Beach" character, is

distributed to the public by the local health department and answers many of the questions related to beach advisories in a clear and concise manner.



- *Data management.* The Coastal Resources Division applied for and received an EPA National Environmental Information Exchange Network

(NEIEN) grant to develop a method of transmitting the beach data into EPA WebSIM via the Georgia network node. The Division then contracted with Acclaim Systems to develop an Oracle database with a Web-based front end and data transport capabilities.

The Oracle application automatically calculates the rolling 30-day geometric mean and automatically generates an e-mail and sends it to the laboratory manager and to the CRD manager notifying them when the EPA-recommended level has been exceeded. Programmed into the geometric mean application is a "what if" calculator that automatically displays the hypothetical value of the next sample needed to reach the EPA geometric mean threshold. This function is useful to beach managers for projecting what might happen with a particular beach in the near future.

### Guam

The Guam Environmental Protection Agency (Guam EPA) administers the beach monitoring and notification program for the territory. Tourists, fishermen, and the public use the beaches and lagoons of Guam heavily every day. Guam has approximately 31.5 miles of beaches. The BEACH program has been instrumental in maintaining and enhancing the territory's water quality and marine monitoring programs over the past four years.

- *Monitoring.* Guam's Recreational Beach Monitoring Strategy focuses on the monitoring of "whole-body" (primary-use) and "limited whole body" (secondary-use) recreational marine waters for the presence of microbiological organisms. This program is important because consistent monitoring ensures the protection of the public from diseases such as gastroenteritis, hepatitis, and cholera caused by elevated levels of microbiological organisms. Guam EPA monitors 38 fixed stations weekly along Guam's most frequently used coastal beaches (Tier 1 beaches) for enterococci bacteria.
- *Public notification.* When samples exceed the single sample maximum or geometric mean criteria for enterococci bacteria, an advisory is released to notify the public that the beach is closed or to warn against swimming. These bacteria criteria were updated in

FY 2004 in the water quality regulations. Guam uses the local media (newspapers and TV) and its Web site to provide real-time results to the public. The Web site posts the weekly results and historical summaries to communicate potential risks to the public ([www.guamepa.govguam.net/programs/emas/beach.html#REPORT](http://www.guamepa.govguam.net/programs/emas/beach.html#REPORT)). Furthermore, all reports listed above are accompanied by a press release making them available to any member of the public.

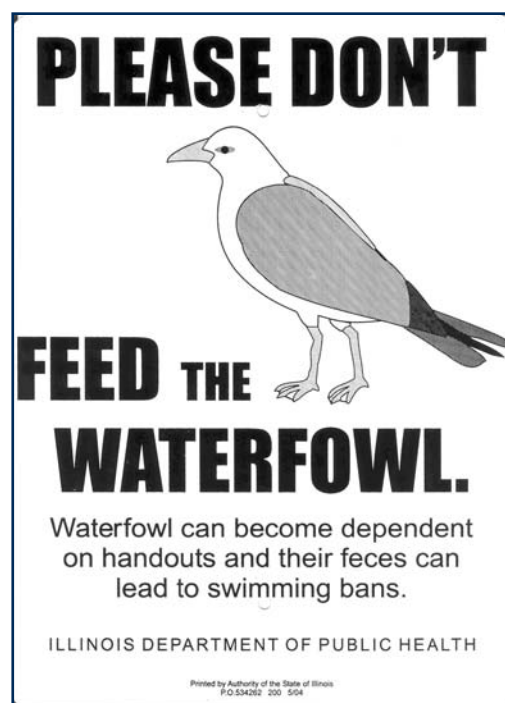
### Hawaii

There are more than 400 beaches in Hawaii, including such well-known beaches as Waikiki and Lanikai. Although the Hawaii Department of Health (HDOH) had an established beach monitoring program prior to the first award of BEACH Act grant funds, the addition of these funds has enabled Hawaii to expand its monitoring efforts from a small group of highly visited beaches to a wider range of coastal beaches throughout Hawaii's 297 miles of beaches. These grant funds have also assisted Hawaii in developing its public notification system. Hawaii has received \$1,030,971 in BEACH Act grant funds since 2001.

- *Risk-based beach ranking.* The HDOH developed a risk-based ranking system to classify beaches on the islands of Oahu, Maui, Kauai, and Hawaii. HDOH used this ranking system to determine the monitoring frequency of beaches in the state, allowing monitoring efforts to focus throughout the entire year on beaches with high visitation while also providing periodic monitoring surveillance of other beaches throughout the state. Ranks are revised as additional information becomes available.
- *Monitoring.* HDOH increased monitoring frequency from once a week to twice a week at high-use beaches and developed a rotating schedule for monitoring beaches with lower use on a periodic basis. Hawaii is in the process of increasing the monitoring frequency for high-use beaches to four times a week.

### Illinois

The Illinois Department of Public Health (IDPH) has been responsible for licensing bathing beaches in Illinois since 1974. IDPH's BEACH Program goals are to improve public health and environmental protection programs for beachgoers and to provide the public with



information about Lake Michigan water quality at Illinois beaches.

- *Monitoring.* Illinois beaches along Lake Michigan are among the most frequently monitored beaches in the nation. All the coastal beaches in Lake County and suburban Cook County are monitored seven days a week during the swimming season. Chicago beaches are monitored 5 days a week. In addition, beach water quality monitoring is augmented through the use of *E. coli* predictive models at several Lake Michigan beaches.
- *Public notification.* IDPH provides beach water quality and program information to beachgoers through informational brochures, signs, and Web sites. An educational beach pamphlet titled *Why is the beach closed?* was developed and distributed to beach patrons. "Don't Feed the Waterfowl" signs have been posted at several Lake Michigan beaches to discourage visitors from feeding birds, which can contribute significant fecal loads to beach water.

### Indiana

Indiana has approximately 23 miles of beaches along the Lake Michigan shoreline, including such important destinations as the Indiana Dunes National Lakeshore, which has 9 beaches, and the Indiana Dunes State

Park, with 2 main sections of beaches, along with 14 other county and city beaches. The Indiana Department of Environmental Management (IDEM) administers the Beach Monitoring and Notification Program in conjunction with the Lake County Parks and Recreation Department, the Hammond Health Department, the East Chicago Department of Public and Environmental Health, the Gary Sanitary District, the Town of Ogden Dunes, the Town of Dune Acres, and the LaPorte County Health Department. IDEM has received \$676,000 in BEACH Act grants since 2000. Its goals are improving public health and environmental protection programs for beachgoers and informing the public of the water quality at their beaches.

- *Monitoring.* Prior to the BEACH Act grant, *E. coli* monitoring occurred only one day a week at Indiana's Lake Michigan beaches. Since receiving funding, Indiana has been able to increase the sampling frequency to five to seven days a week at most of its Lake Michigan beaches. In addition,

in 2004 IDEM used grant dollars to fund two predictive model development projects with the goal of increasing the efficiency of the monitoring activities along the Lake Michigan shoreline in the future.

- *Public notification.* Indiana's Lake Michigan beach managers have requested that IDEM provide real-time information regarding CSO discharge events. In conjunction with the Earth911 data reporting system Web site ([www.earth911.org/waterquality](http://www.earth911.org/waterquality)), IDEM is working to implement a pilot project designed to provide real-time information regarding CSO discharge events to local beach managers and the public. This project will be linked to Indiana's Beach Program Web site ([www.in.gov/idem/beaches](http://www.in.gov/idem/beaches)).

### **Louisiana**

*(Note: This highlight was revised after hurricanes Katrina and Rita to reflect current conditions.)*



Louisiana has several beaches historically visited by the public, including the highly frequented Fountainebleau State Park, Grand Isle State Park, Cypremort Point State Park, Fourchon Beach, and Holly Beach. The Louisiana Department of Health and Hospitals (LDHH) administers the Beach Monitoring Program in the state and conducts, or contracts with other state and local governments to conduct on its behalf, monitoring and public notification. Prior to hurricanes Katrina and Rita, monitoring was conducted on approximately 23 miles of beaches.

LDHH completed a thorough, systematic review of available data and information to identify and rank Louisiana's beaches according to risk. LDHH uses the resulting beach classification scheme as a basis for monitoring the state's high-priority beaches. (See [www.o-ph.dhh.state.la.us/sanitarianservices/beachmonitor/index.html](http://www.o-ph.dhh.state.la.us/sanitarianservices/beachmonitor/index.html) and click on "Louisiana's BEACH Act Grant Report" for a description of the state's process for identifying priority beaches.) LDHH also has developed a high-quality public notification program that efficiently uses beach signs, the department's Web site, press releases, and direct contact of partner agencies and local officials to communicate to the public if beach advisories are warranted. Because of extensive damage to the state's beaches and associated infrastructure by Hurricanes Katrina and Rita, LDHH is reevaluating the state's existing List of Beaches to determine whether the list and associated monitoring schedules need to be revised.

### Maine

Maine has 46 beaches, which are critical to the viability of its tourist industry. These include such popular places as Old Orchard Beach and Wells Beach in southern Maine and Mount Desert Island, home of Acadia National Park, bordering the downeast section of the 5,250-mile coast. The Maine Coastal Program/State Planning Office manages the Maine Healthy Coastal Beaches Program in cooperation with the University of Maine Cooperative Extension and Sea Grant (responsible for coordination of the program). Maine has received \$1,090,713 in BEACH Act grants since 2001.

- *Monitoring.* With EPA BEACH Act grant funds, Maine has been able to develop a statewide monitoring and notification program, recruiting 19 towns and State Parks representing 42 beach management areas. This non-mandatory, local-jurisdiction program put in place an EPA-approved Quality Assurance Project Plan and developed a tiered monitoring approach with protocols, regional laboratories, training, and multiple resources for the program.
- *Public outreach and education.* This new and voluntary program employed a marketing plan, and resources were developed to reach a broad audience through radio, television, news media, posters, flyers, brochures, and a user-friendly and informative Web site, [www.MaineHealthyBeaches.org](http://www.MaineHealthyBeaches.org). A public interface to Maine's on-line database was launched on the Web site May 2005, and it offers a wealth of information on the beach science, status, and data for the program.

### Maryland

Each summer many state residents and visitors go to Maryland beaches for outdoor recreation and vacations. To protect the beach-going public, Maryland delegates a beach monitoring and public notification program to its local health departments. Beginning in the 1980s, each county had its own, independently developed program. From timing and frequency of sampling to methods of public notification, counties have had very different programs in terms of resources spent on beaches and priority given to public natural bathing areas. Maryland's goal, with the use of BEACH Act grant money and EPA guidance, was and is to maintain a standardized beach program for its coastal counties. Maryland has adopted the EPA-recommended indicators and criteria.

- *Monitoring.* Predictive models are being developed for high-use beaches in Maryland. Projects to monitor pollution sources affecting bathing areas have identified and remedied water quality problems at beaches.
- *Public notification.* Public notification, education, and outreach have increased awareness of the potential risks and hazards of bathing in natural waters, as well as providing public advisory information,





resulting in a better-educated and safer public. Additional information for the Maryland Beaches Program is available by calling 1-800-633-6101, x 3906 or by visiting the Web site <http://www.mde.state.md.us/CitizensInfoCenter/Health/beaches.asp>.

### Massachusetts

Every year people head to bathing beaches in Massachusetts for vacation, relaxation, and recreation. The Massachusetts Department of Public Health (MDPH) is responsible for implementing of the bathing beach monitoring program at more than 500 coastal beaches in the state. The BEACH Act resulted in funding that MDPH has used to increase and implement consistent water quality monitoring throughout the state, increase public awareness of beach water quality issues, and identify areas of concern. Massachusetts has received \$1,090,645 in BEACH Act grants since 2000.

- *Monitoring.* MDPH has achieved weekly monitoring at the state's public and semi-public marine beaches.
- *Public notification.* MDPH has developed a public notification Web site ([www.mass.gov/dph/beha/tox/reports/beach/beaches.htm](http://www.mass.gov/dph/beha/tox/reports/beach/beaches.htm)), where water quality information and beach open/closed status is shown in near-real time.

### Michigan

Michigan has received a total of \$1,134,966 in BEACH Act funding to support monitoring programs for 327 public beaches in 41 counties along the state's 3,200 miles of Great Lakes shoreline. Local health departments request an average of \$380,000 of BEACH Act funds per year from the Michigan Department of Environmental Quality (MDEQ) for local beach monitoring programs for approximately 200 high-priority beaches. The BEACH Act allocation for Michigan provides funding to support monitoring once a week at 80 beaches for part of the summer and 100 beaches for most of the summer.

- *Monitoring.* All beach monitoring data are reported to and evaluated by the MDEQ. The MDEQ incorporates beach monitoring data into other water pollution prevention programs to encourage strategic improvements in water quality.
- *Public notification.* The Michigan Beach Monitoring Web site (<http://www.michigan.gov/deq/0,1607,7-135-3313,00.html>) immediately provides current and historical test results for *E. coli* and beach closings/advisories as they are reported from health departments for all public beaches in Michigan. All public beaches are required to post a sign indicating whether the beach is monitored and where the results can be found.

## Minnesota

Minnesota has a number of important beaches, including the 5-mile-long Park Point beach within the city of Duluth and beaches in a number of state parks. The Minnesota Pollution Control Agency administers the Beach Monitoring Program in conjunction with Cook County, Lake County, St. Louis County, the City of Duluth, the Western Lake Superior Sanitary District, the Minnesota Department of Natural Resources, the Minnesota Department of Health, the University of Minnesota–Duluth, Sea Grant, Clean Water Action, the Natural Resources Research Institute, and local clubs such as the Park Point Community Club and the Duluth Boat Club. Minnesota conducts or oversees monitoring and public notification on approximately 58 miles of beaches. The state has received \$467,815 in BEACH Act grants since 2000.

- **Monitoring.** Since the Minnesota Pollution Control Agency started monitoring 35 beaches in 2002 (will be 39 in 2005), the level of awareness of bacterial pollution of recreational waters in the region, as well as in the state, has risen dramatically. The understanding that wastewater overflows and bypasses can have an effect on beach water quality has led to the demand for solutions to the inflow and infiltration problems in the region.
- **Public notification.** Minnesota has improved many aspects of its public notification process. The state has developed an exceptional interactive and informative Web site ([www.MNBeaches.org](http://www.MNBeaches.org)) that summarizes key information about beach advisories and closings. E-mail notices are automatically sent to interested parties. A local phone message is



continually updated with the latest advisories, and the public can call an 800 number to hear beach advisory information. Minnesota also has a good working relationship with the local media.

## Mississippi

*(Note: this highlight was not revised after hurricanes Katrina and Rita to reflect current conditions.)*

Mississippi has numerous important beaches, including such popular destinations as Biloxi and Gulfport. The Mississippi Department of Environmental Quality administers the Beach Monitoring Program in conjunction with the State Beach Monitoring Task Force, and they conduct and oversee monitoring and public notification on approximately 40 miles of beaches. They have received \$831,092 in BEACH grants since 2000.

- **Monitoring.** Under the BEACH Act, the Mississippi Beach Monitoring Program was expanded in 2005 to include 22 beaches, and the frequency of sampling was increased for 7 beaches. Sixteen of the 22 beaches were classified as Tier 1 beaches, and they are monitored 10 times a month during the recreational season (May through October). Six Tier II beaches are monitored 4 times a month. All beaches are monitored 4 times a month during the non-recreational season.
- **Public notification.** During 2000, MDEQ developed a Beach Monitoring Web site to notify the public of the water quality at Mississippi beaches and to provide historical beach monitoring bacteria data. The Web site is at <http://www.usm.edu/gcrl/msbeach/index>. This Web site provides near real-time data from all the monitoring locations, current beach advisories, beach locations and pictures of all the monitored beaches, and maps locating the sampling sites. If bacteria levels reach unsafe levels, advisory notices are placed on the beach stating that swimming is not recommended until bacteria levels return to safe levels. The advisories remain in place until the monitoring data indicate that the water is safe for swimming and water contact.

## New York

New York has 347 regulated beaches located on Lake Erie, Lake Ontario, the Atlantic Ocean, and Long Island Sound, including such well-known beaches as Jones Beach State Park, Rockaway Beach, Coney Island, and Robert Moses State Park. The New York State Department of Health administers the Beach Monitoring Program in conjunction with 11 subcontractors, including 8 organized county health departments; the New York City Department of Health and Mental Hygiene; the New York State Office of Parks, Recreation and Historical Preservation; and one State Health Department District Office, which conduct the monitoring and public notification program for the state's approximately 53 miles of coastal beaches. Since 2001 the New York State Department of Health has received \$1,138,485 in grants from EPA to fund these monitoring and notification programs.

- *Monitoring.* Since the inception of the BEACH Act grant program, 35 new beaches have been added to the inventory of coastal beaches in New York State while 5 beaches originally listed have been dropped. The current list of 347 coastal beaches represents a net increase of 30 beaches.
- *Risk-based beach ranking.* The New York State Department of Health, through its subcontractors, thoroughly assesses all the coastal beaches and uses a risk-based approach to monitor all regulated beaches. Beaches assessed as high risk are monitored at least weekly during the bathing season, while those assessed as medium or low risk are monitored less frequently.

## New Hampshire

New Hampshire administers a Public Beach Inspection Program, or Beach Program, that monitors, inspects, and provides public notification for 16 coastal public beaches. New Hampshire's coastal beaches are a valuable recreational and economic resource, and they include Hampton Beach State Park, New Hampshire's premier coastal beach attraction. New Hampshire has received \$876,994 in BEACH Act grants since 2000.

- *Monitoring.* New Hampshire has increased the number of coastal beaches monitored from 9 in 2000 to 16 in 2005, and the program now includes weekly

monitoring at 14 high-priority beaches. All beaches are subject to annual risk-based beach evaluations, which are the basis of New Hampshire's Tiered Monitoring Plan.

- *Public notification.* New Hampshire has developed a detailed Web site to inform the public of the health risks associated with beach recreational activities. The Web site includes features such as a current advisories page, an illness report form, a public comment section, and annual coastal beach reports. Other means of outreach include signage indicating beach monitoring status, numerous fact sheets, and a brochure.

## New Jersey

Since 1974 the New Jersey Department of Environmental Protection (DEP) has administered the Cooperative Coastal Monitoring Program (CCMP), in which 10 local environmental health agencies participate. The CCMP assesses nearshore coastal water quality and investigates sources of water pollution. To date DEP has received \$908,679 in EPA BEACH Act grants. DEP also received an EPA challenge grant to create a centralized database that will allow for the timely reporting of water quality conditions at New Jersey's beaches.

- *Monitoring and notification.* The local health agencies collect water samples each week and perform the water analyses for enterococci concentrations at 186 ocean and 139 bay monitoring stations. The CCMP enables local health agencies to respond to immediate public health concerns arising from contamination in coastal recreational areas. In addition, DEP performs aerial surveillance of nearshore coastal waters six days a week during the summer. This surveillance enables the routine evaluation of coastal water quality and the assessment of the nature and extent of public reports of ocean pollution. The information collected under the CCMP assists the DEP in developing coastal zone management strategies such as land use planning to control pollution from nonpoint sources.

## North Carolina

North Carolina has numerous important beaches, including such popular destinations as Wrightsville Beach, Atlantic Beach, and the Outer Banks. The North

Carolina Department of Environment and Natural Resources administers the Beach Monitoring Program, and it conducts monitoring and public notification on approximately 330 miles of beaches. The Department has received \$975,691 in BEACH Act grants since 2000. North Carolina has developed and implemented an extensive outreach and education program to educate local governments, the public, and state elected officials about the Beach Monitoring Program. This has led to increased credibility of the program and the investment of all parties in making the program successful. Also, at the beginning of 2004 the North Carolina Commission for Health Services passed new rules codifying the EPA beach guidance at the state level.

- *Public outreach:* North Carolina Recreational Water Quality (RWQ) staff developed an extensive outreach and education plan, targeted to different audiences both internal and external to state government. The audiences include state agency employees; state-level legislative representatives from coastal counties; local government officials and boards of health; interest groups, including tourism, environmental organizations, and pier and camp owners; and local business interests near sampling sites. They created brochures and fact sheets and the beginnings of a Web-based data system that would allow the public access to water quality data for their chosen beaches.

The public can access beach water quality data that are updated weekly, as well as information about the program and downloadable brochures, on the program's Web site at [http://www.deh.enr.state.nc.us/shellfish/Water\\_Monitoring/RWQweb/home.htm](http://www.deh.enr.state.nc.us/shellfish/Water_Monitoring/RWQweb/home.htm). In addition, the RWQ staff instigated a series of face-to-face talks and meetings, which has been their most valuable outreach tool.

### Northern Mariana Islands

The Commonwealth of Northern Mariana Islands (CNMI) Division of Environmental Quality administers the beach monitoring and notification program for the territory. The beaches and lagoon waters of CNMI are used heavily daily by tourists, fishermen, and the public. CNMI has a little more than 28 miles of beaches. The BEACH program has been instrumental in maintaining and enhancing the territory's water quality and marine monitoring

programs over the past four years. On the basis of beach monitoring, CNMI found that of the 28 miles of beaches, 8 miles are impaired, 6.5 miles are fully supporting their designated uses, and 13.8 miles are likely supporting their designated uses but lack sufficient data.

- *Monitoring.* Beach samples are monitored not only for enterococci bacteria, but also salinity, dissolved oxygen, phosphates, nitrates, temperature, pH, and turbidity. The beach monitoring complements CNMI's long-term coral reef ecosystem monitoring and biocriteria development efforts. Beaches that have a high potential risk for harmful pathogens and are heavily used by the public are all considered Tier 1 beaches.
- *Public notification/outreach.* When samples exceed the single sample or geometric mean enterococci bacteria limits in the water quality regulations, the beach is "red flagged," meaning a warning is provided to the public not to swim in these waters. DEQ uses the local media (two newspapers) and its Web site to provide real-time results to the public. The Web site ([www.deq.gov.mp/beach%20monitoring%20web/Map%20Choice.htm](http://www.deq.gov.mp/beach%20monitoring%20web/Map%20Choice.htm)) presents the weekly results and historical summaries to communicate potential risks to the public. Furthermore, all reports listed above are accompanied by a press release making them available to any member of the public. Signs are posted at six frequently used beaches regarding the most recent testing results, and CNMI is beginning to install signs at all other locations.

### Ohio

Ohio regards its border with Lake Erie as a primary natural resource for commerce, tourism, and recreation. The Ohio Department of Health (ODH) has monitored many of the numerous public beaches along the lake since 1973. With the cooperation of its partners (the Ohio Department of Natural Resources, the Ohio Environmental Protection Agency, local health departments, and other interested agencies and organizations), ODH continues to conduct a beach monitoring program each year, generating needed data for allowing the public to make informed decisions about its aquatic recreation.

- *Monitoring.* Since 2002 ODH has used BEACH Act grant funding to increase the frequency of monitoring of Lake Erie beaches from twice per month to four times each week per beach. This frequency allows for swifter identification of bacteria problems and thus shortens the time involved in notifying the public of potential health hazards.
- *Public notification.* ODH provides beach water quality data, beach advisories, and information regarding its monitoring program on the department's Web site at [www.odh.ohio.gov](http://www.odh.ohio.gov). Information on advisory status is also provided through a toll-free telephone line (1-866-OHIO-BCH) for people who lack access to the Internet. BEACH Act funding also has assisted in the development of informational pamphlets that are distributed throughout the Ohio/Lake Erie area. Future funding will allow for the development of bilingual signage and other written information.



### Oregon

In Oregon the public is guaranteed free and uninterrupted use of all beaches along the coastline. Oregon's Parks and Recreation Department administers the ocean shore as a state recreation area. The state's Department of Human Services administers the Beach Monitoring Program and works in conjunction with the Department of Environmental Quality and the Parks and Recreation Department to implement the program. Since 2002 Oregon has received a total of \$747,600 in BEACH Act grant funds.

- *Monitoring.* The Oregon Beach Monitoring Program conducts monitoring year-round and uses an adaptive sampling approach. The beaches sampled

may change seasonally as use patterns and the presence of bacteria change. (<http://oregon.gov/DHS/ph/beaches/beaches.shtml>)

- *Public notification.* Oregon has significantly enhanced its information delivery system with the development of a new Web site, improved signage and news releases, and collaboration with the Oregon Coastal Atlas to display and broadcast monitoring data on its Web site at [www.coastalatlasc.net/learn/topics/waterquality/beach](http://www.coastalatlasc.net/learn/topics/waterquality/beach).

### Pennsylvania

There are 12 permitted coastal recreational beaches on the southern shore of Lake Erie in Pennsylvania. All the beaches are in Erie County, which has the only coastal beaches in the Commonwealth. Annually, over 3 million people visit Presque Isle State Park, which has 11 beaches.

EPA awards a BEACH Act grant to the Erie County Department of Health (ECDH).

- *Monitoring.* Pennsylvania has adapted the *E. coli* standards recommended by EPA. A predictive model of recreational beach water quality based on weather, known sewage discharges, storm events, and water currents is being formulated. The information would be used to see if a correlation could be established with weather and high bacteria counts. If a predictive model were established, it would allow the beach managers to close beaches on a presumptive basis. This could prevent swimming in contaminated waters.
- *Public notification.* ECDH is developing a Web site to provide the public with updated information on the water quality of permitted Lake Erie beaches.

### Puerto Rico

Puerto Rico, which includes two additional inhabited offshore islands (Vieques and Culebra) and various small uninhabited islands, provides more than 100 coastal segments that are used for bathing nearly all year long. Not all these coastal segments are designated beach areas. The various designated beach areas are operated by one of the following: the National Parks Company, the Department of

Natural and Environmental Resources, or the specific municipalities where the beach is located. In all cases the Environmental Quality Board is responsible for ensuring that the water quality of the coastal segments complies with the applicable water quality standards through monitoring on alternate weeks and enforcement actions whenever noncompliance is discovered.

- *Monitoring.* In the Beach Monitoring Program, Puerto Rico has initially included the 22 major (most frequented) beaches throughout the coastal shoreline of the territory. The Environmental Quality Board monitors all 22 beaches for bacteriological and physical parameters on alternate weeks. Any noncompliance with respect to water quality is addressed immediately through a resampling sequence. The compliance status of each beach program is announced publicly in newspapers and on the Environmental Quality Board's Web site at [www.jca.gobierno.pr](http://www.jca.gobierno.pr).

### Rhode Island

Rhode Island has 70 environmentally and economically important coastal beaches. The Rhode Island Department of Health (HEALTH) administers the Beach Monitoring Program, with the support of the Department of Environmental Management, the Department of Transportation, the University of Rhode Island, and the Office of the Governor. HEALTH conducts monitoring at approximately 25 miles of beaches and notifies the public whenever a beach is opened or closed. HEALTH has received \$911,769 in BEACH Act grant funding since 2000.

- *Monitoring.* HEALTH has conducted sanitary surveys at all 70 licensed coastal beaches. A review of existing information, collection of geographic data, water quality monitoring, and extensive field surveys have allowed HEALTH to target resources, such as increased monitoring, to the beaches of greatest risk to public health.
- *Source identification.* HEALTH has worked to coordinate a multi-agency response to beach closings. The Governor of Rhode Island has charged HEALTH with not only monitoring beaches but also partnering with local, state, and federal agencies

to identify and eliminate sources of pollution that cause the beaches to be closed.

### South Carolina

South Carolina has numerous important beaches, including Myrtle Beach, Kiawah, and Hilton Head. The Department of Health and Environmental Control (DHEC) administers the Beach Monitoring Program in conjunction with some local authorities, and together they conduct and oversee monitoring and public notification on approximately 180 miles of beaches. They have received \$986,868 in BEACH Act grants since 2000. As noted above, the state has worked with local authorities through the use of mini-grants to implement the program. This allows strong working relationships between state and local governments and gives local governments a greater commitment to seeing the beach monitoring program work.

- *Data management.* South Carolina's existing Environmental Facility Information System (EFIS) is used to manage monitoring and advisory data. All monitoring data are entered into EFIS through manual entry or uploaded from the Laboratory Information System (LIMS). The program coordinator enters advisory information into EFIS.
- *Tiering of Beaches.* In August 2005 DHEC's Bureau of Water plans to issue a contract for continued surveying at sites identified previously as Tier 3. This contractor will verify the site locations, develop necessary survey forms if sampling is needed, document public access and use, and determine sources of pollution.

### Texas

Texas has numerous popular beaches, including beaches in the vicinity of such important destinations as Galveston, Corpus Christi, and South Padre Island. The Texas General Land Office (GLO) administers the Texas Beach Watch Program in conjunction with various contracted entities, including local county health departments, universities, and municipalities. GLO oversees monitoring and public notification on approximately 144 miles of beaches in Texas. GLO has received \$1.23 million in BEACH Act grants since 2000.

- *Tiering of beaches.* GLO thoroughly evaluated all of the state's beaches. The Office identified beach segments that are used most frequently by the public and determined where health risks to large swimming populations are greatest. Based on the results of this risk-based approach, GLO prioritized all defined beach segments for implementation of its monitoring and public notification program. Before passage of the BEACH Act of 2000, the state was sampling at 13 of the most popular beaches on the Texas coast using state funds. Using the BEACH Act grants, Texas has expanded its sampling program, and data collection now occurs at approximately 59 beaches in 7 counties. (See <http://www.glo.state.tx.us/coastal/beachwatch/index.html> for a description of GLO's classification of beaches and monitoring plan.)

### Virgin Islands

The U.S. Virgin Islands (USVI) consists of four main islands—St. Thomas, St. John, Water Island, and St. Croix. These islands harbor some of the most fascinating and beautiful marine environments in the world. These aquatic resources have contributed to drawing an average of 2 million divers, beachcombers, and sightseers per year, spending nearly \$100 million from 1997 to the present. The USVI also has a coastline greater than 185 nautical miles, allowing for public access at hundreds of locations during a year-round swimming season. These unique factors led to the development and implementation of the USVI BEACH Water Quality Monitoring Program, which is essential for the protection of both beachgoers and the marine resources.

- *Monitoring.* The 2001 BEACH Act grant was used to develop the program's Quality Assurance Project Plan. Second-year funds were used to implement the program. A total of 43 beaches were selected—20 on St. Croix, 15 on St. Thomas, and 8 on St. John. Sampling officially began in the St. Thomas/St. John district in July 2004 and in the St. Croix district in August 2004. The selected beaches are monitored weekly. Two state-

approved labs were selected to perform the analysis, one on St. Croix and one on St. Thomas, and both use EPA method 1600 for enterococci analysis.

- *Public notification/outreach.* The USVI BEACH program is establishing a Web site and a toll-free number to ensure that the public has access to the data collected and the public advisory status of each beach. The program is using temporary beach water quality warning signs until the permanent signs are completely assembled. The program has conducted public outreach to several local public schools, and several interviews with the local media have been held.

### Virginia

Virginia has been monitoring the bathing beaches at Norfolk and Virginia Beach since the 1970s. In 2001 Virginia received the first EPA BEACH Program grant to implement a Beach Monitoring and Public Notification Program for the 2002 swimming season at bathing beaches along the Atlantic coast and the Chesapeake Bay in Virginia. This grant was used to implement a state-level coordinated beach monitoring program at Norfolk and Virginia Beach. The Virginia Department of Health (VDH) coordinates the program, and state employees in the local health departments carry out weekly monitoring.



- *Monitoring.* In 2003 the Beach Monitoring Program was expanded to include additional beaches along the Virginia coast. The Beach Monitoring Program in Virginia provides seasonal water monitoring coverage of bathing beaches at Virginia Beach, Norfolk, Newport News, Hampton, and Yorktown; the eastern shore of Virginia; and Gloucester and King George counties.
- *Public notification.* State employees in seven different Health Districts participate in the program by conducting sampling and posting signs at beaches when water samples exceed the state water quality standards for bacteria. The public is notified of a swimming advisory through press releases to local newspapers and notices on the Virginia Department of Health Web page ([http://www.vdh.virginia.gov/whc/external\\_whc/BeachMonitoring.asp](http://www.vdh.virginia.gov/whc/external_whc/BeachMonitoring.asp)). In addition, two source-tracking techniques were used on Virginia's beaches during the 2004 swimming season. One method provided information on whether a human waste stream was present at the beaches; the other provided greater detail on the source of contamination by linking the bacteria to more specific sources such as pets, wildlife, human, or waterfowl sources.

### Washington

Washington State has 3,066 miles of shoreline with over 2,000 miles in the west coast's largest estuary, Puget Sound. Washington has a variety of beach destinations, including coastal treasures like Westport, Ocean Shores, the city of Edmonds with its nationally recognized scuba diving sanctuary, and the city of Seattle, which has approximately 30 miles of shoreline.

The Washington State Department of Ecology (Ecology) and Department of Health (Health) administer the Beach Monitoring Program in conjunction with county environmental health departments. The monitoring takes place on approximately 60 miles of beaches at the local level, while public notification occurs through actions taken at the state and local levels. Washington has received \$880,053 in BEACH Act grants.

The BEACH Act grants have enabled Washington to develop and implement a statewide monitoring

and notification program for bacteria at the state's most popular marine recreational beaches. Prior to Washington State's BEACH Program being implemented in 2003, only a handful of marine beaches were monitored with the intent to reduce the risk of disease to users of the state's waters. County health departments monitored beaches independently, if at all, and developed threshold levels independent of other counties. Because of EPA's BEACH Act grants, Washington now has a uniform statewide monitoring program and an interactive mapping Web site that notifies people of advisories and closings.

Using CWA funding from the BEACH Act, Ecology and Health have developed the Washington State Beach Environmental Assessment, Communication and Health (BEACH) Program. Washington's statewide BEACH Program monitors marine recreational beaches to reduce the risk of disease and provide a notification program warning recreational users when there is an increased risk. As lead agencies for the beach monitoring and notification program, Ecology and Health formed an Inter-agency Advisory Committee made up of county, city, and state officials, nonprofit groups, and local park managers to develop the program. The committee chose to implement the BEACH Program by using state agencies to coordinate and county environmental health departments to voluntarily implement the monitoring plans. Public notification is conducted at both the county and state levels.

- *Monitoring.* In 2003, thanks to EPA's grants, Washington State was able to implement the first statewide monitoring and notification program for marine recreational beaches in a pilot project phase. Washington began full implementation of the BEACH Program by evaluating and ranking roughly 1,000 marine beaches in the state. Seventy-two beaches were identified as priority beaches and were monitored for bacteria during the 2004 summer swimming season. Washington State's BEACH Program will evaluate the results from 2003 and 2004 for chronically polluted beaches. Shoreline surveys and further investigation and remediation will follow for the beaches identified as problem beaches.



The results from the BEACH Program demonstrate that Washington has relatively clean water and safe beaches: 100 percent of the state's marine recreational beaches fall below EPA's recommended geometric mean of 35 enterococcus colonies per 100 mL. However, the BEACH Program has identified roughly 20 percent of the monitored beaches as having bacteria levels above expected background levels. With the population in the Puget Sound region expected to grow by 1.2 million people by 2025, bacteria levels are expected to increase in Washington's recreational waters. Sample results were analyzed to see whether environmental factors like rainfall and sediment size could be correlated with an increase in bacteria levels. Further investigation is needed to determine whether the increased levels of bacteria are due to human impacts or natural causes and whether an increased risk of disease is present.

- *Public notification/outreach.* The BEACH Program also notifies the public when a sewer spill adjacent to a public beach has occurred. Prior to the BEACH Program, statewide notification did not exist. A new interactive, map-based Web site allows people to determine the condition of the beach they plan to visit before driving hours to get there only to find the beach unhealthy for use that day.

Better public education is still needed to increase the awareness of the public as to the potential risks associated with swimming in polluted water. The BEACH Program developed a public education and outreach campaign for 2005.

### Wisconsin

- *Beach assessment and identification.* The Wisconsin Department of Natural Resources collected geolocational data on 193 beaches, along with their proximity to wastewater outfalls on the shoreline of Lake Michigan and Lake Superior. This information was used to develop state and county maps and to determine actual beach miles along the Great Lakes shores.
- *Public notification.* The Wisconsin Beach Health Web site, which is accessible to the public, stores up-to-date monitoring data and advisory information

(www.wibeaches.us). An e-mail notification system allows beach users to sign up to be notified of the status of beaches of their choice. A toll-free phone line is also available for public use.

### 4.4 What have tribal governments done?

Section 518(e) of the CWA authorizes EPA to treat eligible Indian tribes in the same manner as states for the purpose of receiving CWA section 406 grant funding. To be eligible for a CWA section 406 development grant, a tribe must have coastal recreation waters adjacent to beaches or similar points of access that are used by the public. In addition, a tribe must meet the requirements in CWA section 518 for treatment in a manner similar to a state for purposes of receiving a CWA section 406 grant. At this time, no eligible tribe has applied for a BEACH Act grant.

### 4.5 What have local governments done?

The BEACH Act authorizes EPA to make a grant to a local government for implementation of a monitoring and notification program only if, after the 1-year period beginning on the date of publication of the performance criteria (which was July 19, 2002), EPA determines that the state within which the local government has jurisdiction is not implementing a program that meets the requirements of section 406(b) of the CWA, as amended by the BEACH Act. On April 26, 2006, EPA made this determination for Pennsylvania and transferred the state's grant to Erie County.

### 4.6 References

- USEPA (U.S. Environmental Protection Agency).  
2002a. *National Beach Guidance and Required Performance Criteria for Grants*. EPA 823-B-02-004. U.S. Environmental Protection Agency, Office of Water, Washington, DC. June.
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