

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
WATER BUREAU
JANUARY 2005

STAFF REPORT

MICHIGAN BEACH MONITORING
YEAR 2003 ANNUAL REPORT

INTRODUCTION

The Michigan Department of Environmental Quality (MDEQ)'s surface water quality monitoring program is summarized in the January 1997 report entitled, "A Strategic Environmental Quality Monitoring Program for Michigan's Surface Waters" (Strategy). The objectives of the beach monitoring component of the Strategy are listed below.

1. Assist local health departments to implement and strengthen beach monitoring programs.
2. Determine whether waters of the state are safe for total body contact recreation.
3. Create and maintain a statewide database.
4. Compile data to determine overall water quality.
5. Evaluate the effectiveness of MDEQ programs in attaining water quality standards (WQS) for pathogen indicators.

The following report contains detailed information about the beach monitoring program, as well as water quality data for 2003.

ASSIST LOCAL HEALTH DEPARTMENTS

Beach Monitoring

The monitoring of beaches in Michigan is voluntary and is conducted by the local health departments. Health departments are required to comply with Michigan's WQS according to R 333.12544 of the Public Health Code, 1978 PA 368, as amended, which states:

The department, in cooperation with local health departments, shall promulgate rules which shall contain minimum sanitation standards for determining water quality at bathing beaches open to the public. The rules shall be used by a local health department to establish the safety of the water for swimming. Water quality standards adopted under this section shall be in conformity with the official state water quality standards adopted by the Department of Environmental Quality under the authority of Part 31 (Water Resources Protection) of the Natural Resources and Environmental Protection Act, Act No. 451 of the Public Acts of 1994, being Sections 324.3101 to 324.3119 of the Michigan Compiled Laws.

Representatives of health departments are authorized to test the water at bathing beaches, are required to notify various entities of the test results within 36 hours, and may petition the Circuit Court for an injunction ordering the owners of a beach to close the beach. Beaches must have signs posted as to whether they are tested. R 333.12541 of the Public Health Code states:

(1) The local health officer or an authorized representative of the local health department having jurisdiction may test and otherwise evaluate the quality of water at bathing beaches to determine whether the water is safe for bathing purposes. However, the local health officer or authorized representative shall notify the city, village, or township in which the bathing beach is located prior to conducting the test or evaluation.

(2) If a local health officer or an authorized representative of a local health department conducts a test or evaluation of a bathing beach under subsection (1), within 36 hours of conducting the test or evaluation, he or she shall notify the department, the city, village, or township in which the bathing beach is located, and the owner of the bathing beach of the results of the test or evaluation.

(3) The owner of the bathing beach shall post at the main entrance to the bathing beach or other visible location a sign that states whether or not the bathing beach has been tested or evaluated under subsection (1) and, if the bathing beach has been tested, the location of where test results may be reviewed. Open stretches of beach or beaches at road ends that are not advertised or posted as public bathing beaches do not need to have signs posted.

(4) If a local health officer or authorized representative of the local health department conducts a test or evaluation under subsection (1) and, based upon the standards promulgated under section 12544, the health officer or the authorized representative determines that the water is unsafe for bathing, he or she may petition the circuit court of the county in which the bathing beach is located for an injunction ordering the person owning or operating the bathing beach to close the bathing beach for use by bathers or ordering other measures to keep persons from entering on the bathing beach. Upon receipt of a petition under this subsection, the court may grant an injunction if circumstances warrant it.

(5) As used in this section:

(a) "Bathing beach" means a beach or bathing area offered to the public for recreational bathing or swimming. It does not include a public swimming pool as defined in Section 12521.

(b) "Department" means the department of environmental quality.

Funding for Beach Monitoring

Prior to 2000, health departments relied on local funding to conduct beach monitoring programs. Local funding is often not sufficient to execute a comprehensive monitoring program. The MDEQ now provides Clean Michigan Initiative-Clean Water Fund (CMI-CWF) and Beaches Environmental Assessment and Coastal Health Act (BEACH Act) grants to local health departments to aid in the implementation or enhancement of their beach monitoring program.

The MDEQ awards CMI-CWF and BEACH Act grant monies to local units of government and nonprofit entities. Eligible entities include county, city, township, and village agencies, watershed and environmental action councils, universities, regional planning agencies, and incorporated not-for-profit organizations. The majority of grants are awarded to local health departments. If a group other than a local health department is awarded a grant, the MDEQ requires the group to work closely with their local health department.

The CMI-CWF and BEACH Act grants are designed to fund proposals that determine and report levels of *Escherichia coli* (*E. coli*) in the swimming areas of public beaches. In selecting recipients for grant awards, the MDEQ considers all of the following:

- Location and frequency of beach use.
- History of beach monitoring and bacterial contamination.
- Ability to communicate results to the public in an efficient manner.
- Ability to respond and take appropriate action in the event of beach contamination.

In 1998, only 20 counties monitored their beaches. Since the MDEQ has been providing grants for beach monitoring, the number of counties with a beach monitoring program has risen steadily. Twenty-four counties monitored at least one of their beaches in 2000, 36 counties monitored in 2001, and 38 counties monitored in 2003 (Appendices A and B). Although no grant funding was available in 2002, monitoring was conducted in 26 counties.

CMI-CWF Grants

The CMI-CWF bond initiative resulted in a substantial increase in annual funding for statewide surface water quality monitoring beginning in 2000. The CMI-CWF offers reliable funding for the monitoring of surface water over a period of approximately 15 years. In 2000 and 2001, CMI-CWF monies were distributed for inland and Great Lakes beach monitoring programs. Beginning in 2002, CMI-CWF funds were designated for inland beaches only.

The MDEQ awarded \$193,000 in 2000, \$99,934 in 2001, and \$112,833.41 in 2003, of CMI-CWF grant funds to aid in the development and implementation of bathing beach monitoring programs throughout the state (Appendix C).

BEACH Act Grants

The MDEQ is allocated grant funds by the United States Environmental Protection Agency (USEPA), as authorized by the federal BEACH Act. These grant funds have been designated for Great Lakes beaches and assist various organizations with their beach monitoring programs. State, local, and tribal governments having coastal waters are eligible to apply for the BEACH Act grants. USEPA (2002a) has published performance criteria that must be met by grant recipients.

In 2002, the MDEQ distributed \$269,203.80 of BEACH Act funds (for the 2003 season) to monitor beaches in 29 counties located along the Great Lakes. In 2003, the MDEQ awarded \$244,873.04 of BEACH Act funds (for the 2004 season) to monitor beaches in 33 counties located along the Great Lakes (Appendix D).

DETERMINE WHETHER WATERS OF THE STATE ARE SAFE FOR TOTAL BODY CONTACT RECREATION

Pathogens

Pathogens are microorganisms (bacteria, protozoans, or viruses) that cause disease. Most waterborne pathogens are readily found in the feces of humans and other warm-blooded animals. Gastroenteritis is the most common result of swimming in contaminated water although other illnesses can occur. Table 1 provides a list of waterborne pathogens and the

illnesses associated with them. The severity of the disease or illness depends on the exposure and the type of pathogen. Cheung et al., (1990) tested numerous indicators and concluded that *E. coli* showed the best correlation with combined swimming-associated gastroenteritis and skin symptom rates.” The USEPA (1986, 2002a) has determined that *E. coli* is the best indicator for the presence of waterborne pathogens. *E. coli* is also used as the indicator because testing for other pathogens in a water sample is virtually impossible because of the cost and the lack of analytical methods.

Sources of Bacterial Contamination

Combined Sewer Overflows (CSOs) are discharges of raw or inadequately treated sewage from sewer systems that are designed to carry both domestic sewage and storm water to Wastewater Treatment Plants (WWTPs). When a storm event occurs and the volume of the wastewater is larger than the WWTP can process, the excess untreated sewage and storm water are discharged into local waterways.

Sanitary Sewer Overflows (SSOs) are discharges of raw or inadequately treated sewage from municipal sanitary sewer systems, which are designed to carry domestic sanitary sewage but not storm water. Systems that contain cracks, obstructions, storm water connections, or that are undersized with sewers and pumps too small to carry all the sewage may leak or overflow raw sewage from manholes, bypass pump stations, and WWTPs into the surrounding waters, particularly during extreme hydrologic events.

Failing septic systems can cause leaching and/or runoff into the waterways causing bacterial pollution. Urban storm water runoff from roads, roofs, construction sites, parking lots, etc., may contain fecal matter from pets and urban wildlife. Excessive waterfowl near the beaches and animal waste runoff from farms and large Concentrated Animal Feeding Operations (CAFOs) can contribute to elevated bacterial levels. Illicit connections of pipes containing sewage to storm sewers or surface waters are also a potential source of bacterial contamination.

E. coli Standard

The MDEQ requires beaches to be monitored according to the Part 4. WQS, promulgated under Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended:

R 323.1062 Microorganisms

Rule 62(1). All waters of the state protected for total body contact recreation shall not contain more than 130 *E. coli* per 100 milliliters (ml), as a 30-day geometric mean.

Compliance shall be based on the geometric mean of all individual samples taken during 5 or more sampling events representatively spread over a 30-day period. Each sampling event shall consist of 3 or more samples taken at representative locations within a defined sampling area. At no time shall the waters of the state protected for total body contact recreation contain more than a maximum of 300 *E. coli* per 100 ml.

Compliance shall be based on the geometric mean of 3 or more samples taken during the same sampling event at representative locations within a defined sampling area.

All surface waters of the state are protected for total body contact according to the Part 4 WQS as follows:

R 323.1100 Designated Uses.

Rule 100(2). All surface waters of the state are designated for, and shall be protected for, total body contact recreation from May 1 to October 31 in accordance with the provisions of R 323.1062. Total body contact recreation immediately downstream of wastewater discharges, areas of significant urban runoff, combined sewer overflows, and areas influenced by certain agricultural practices is contrary to prudent public health and safety practices, even though water quality standards may be met.

Beach Closures

Beach advisories or closures in Michigan are most commonly issued because of elevated counts of *E. coli* in water samples collected from the shoreline of a water body. Health departments use the daily and the 30-day geometric mean to determine if a beach closure or an advisory should be issued. The health department notifies the owner of the beach when a beach should be closed. If necessary, the health department can petition the court for an injunction to force the owner to close the beach. The beach closure or advisory remains in effect until additional tests meet the WQS.

CREATE AND MAINTAIN A STATEWIDE DATABASE

The MDEQ developed a centralized statewide database to track bathing beach monitoring *E. coli* test results. These results are available electronically to the public via the MDEQ's Web site. The Web site includes information about individual beaches (by county or lake name), frequency of testing, monitoring history, beach closings, and monitoring efforts. The Web site also provides information for beach monitoring procedures and methods, additional links to beach monitoring resources, and contact information for federal, state, and local beach monitoring staff.

According to R 333.12541(2) of the Public Health Code, all local health departments are required to report their beach monitoring test results to the MDEQ within 36 hours of conducting the test or evaluation. Health departments receiving beach monitoring grants are required to enter their data on the MDEQ's Web site, whereas all other health departments are encouraged to report their data via the Web site. Data for 38 counties are currently available on the Web site.

COMPILE DATA TO DETERMINE OVERALL WATER QUALITY

List of Beaches

Michigan inland and Great Lakes beaches that have been identified by the MDEQ so far are listed in Appendix A and Appendix B, respectively. The beaches are arranged alphabetically by county and it is denoted whether the beaches are monitored. The beach Web site lists 337 public beaches on inland lakes and rivers and 454 public beaches on the Great Lakes. In addition, the MDEQ has created maps showing the locations of the Great Lakes beaches in Michigan. These maps represent the following:

- Michigan Great Lakes Public Beaches (Figure 1)
- Monitored Great Lakes Beaches (Figure 2)
- Great Lakes Beaches with WQS Exceedances in 2003 (Figure 3)

The MDEQ is planning to create similar maps for public beaches on Michigan's inland lakes.

Synopsis of Data

In 2003, beach monitoring was conducted in 38 out of the 83 counties in Michigan. A total of 392 public beaches (208 Inland, 184 Great Lakes) were monitored in these counties. Of the total number of beaches monitored, 140 exceedances of the WQS occurred at 81 beaches. Thirty-one of these exceedances occurred at inland beaches and 50 exceedances occurred at Great Lakes beaches. Of the total water samples analyzed from 392 beaches in 2003, only 3% exceeded the *E. coli* WQS of 300 *E. coli* per 100 ml (Appendix E).

There were 100 instances of beach closings or advisories in 1999, 276 in 2000, 119 in 2001, 117 in 2002, and 140 in 2003.

EVALUATE THE EFFECTIVENESS OF MDEQ PROGRAMS IN ATTAINING WQS FOR PATHOGEN INDICATORS

Effectiveness of Programs

The MDEQ has developed programs to address major sources of fecal contamination, such as CAFOs, SSOs, CSOs, and illicit connections. All of these contamination sources can adversely affect the water quality at beaches. Significant funding for beach monitoring has only been available since 2000. Therefore, it is still too early to use the beach monitoring results to determine whether the MDEQ's programs have resulted in the improvement of water quality at beaches.

TMDL Development

Water quality protection has been a great concern in Michigan and depends on the collective efforts of water pollution prevention programs. As part of the beach monitoring program described in the Strategy, health departments and the MDEQ review beach water quality data including the number of beach closures or advisories. This information is used in federal, state, and local pollution prevention programs to help identify sources of pollution that affect beach water quality and to determine which water bodies are not meeting WQS.

Section 303(d) of the federal Clean Water Act and the USEPA's Water Quality Planning and Management Regulations (Title 40 of the Code of Federal Regulations, Part 130) require states to develop Total Maximum Daily Loads (TMDLs) for water bodies that are not meeting WQS. The TMDL process establishes the allowable loadings of pollutants to a water body based on the relationship between pollution sources and in-stream water quality conditions. TMDLs provide a basis for determining the pollutant reductions necessary from both point and nonpoint sources to restore and maintain the quality of the water resources.

E. coli results provided by the local health departments are evaluated on a biennial basis. Water bodies were placed on the 2004 Section 303(d) list if any of the following occurred during 2002 and 2003:

- The 30-day geometric mean of samples exceeded the 130 *E. coli* per 100 ml during the 16-week total body contact recreation period.
- Ten percent of the sample results exceeded the daily maximum WQS of 300 *E. coli* per 100 ml.
- Two or more of the sample results exceeded the partial body WQS of 1,000 *E. coli* per 100 ml.

The water bodies that exceed WQS and require a TMDL are placed on the Section 303(d) list and TMDL development schedule. A water body is not placed on the TMDL development schedule if a remedial action plan is already in place. In 2002, 26 counties monitored 216 public beaches. Of the monitored beaches, 61 reported at least one exceedance of the *E. coli* WQS for total body contact. In 2003, 38 counties routinely monitored 392 public beaches. Of the monitored beaches, 81 beaches reported at least one exceedance of the *E. coli* WQS for total body contact. Based on the 2002 and 2003 beach monitoring data, 26 beaches were added to the Section 303(d) list because they met at least one of the three criteria for placement of a beach on the TMDL list.

USEPA EFFORTS

There are several ongoing efforts at the federal level concerning beach monitoring. These include:

- Epidemiological Studies – NEEAR Study
As a requirement of the BEACH Act, the USEPA is developing faster laboratory test methods (rapid test) and more effective indicators to determine potential health risks from exposure to pathogens in coastal recreational waters. The USEPA is conducting the National Epidemiologic and Environmental Assessment of Recreational (NEEAR) Water study to help meet these program goals. Individuals at a beach are asked about their contact with beach water and approximately a week later, a follow-up phone interview is conducted to record any illness or symptoms experienced since the original interview. Water samples are collected the day of the initial interview and analyzed for indicators of bacterial loads using the (trial) rapid test. The NEEAR study hopes to further establish the link between swimming in bacterial polluted waters and the occurrence of human illness.
- Predicting Pollution
The USEPA is working with other agencies at all levels of government to develop and validate models to predict where and when beach pollution is likely to occur. These models will assist public health officials in determining when warnings may be necessary to alert beach visitors of potential problems during and immediately following a rain storm or other pollution event.
- Informing the Public
As a requirement of the BEACH Act, the USEPA created a Web site titled, "Beach Watch." Beach Watch is an online directory of information regarding the water quality at our nation's beaches, along with local protection and other beach-related programs. The Web site is updated as information becomes available.

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REFERENCES

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USEPA. 1986. Ambient Water Quality Criteria for Bacteria-1986. EPA 440/5-84/002.

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USEPA. 2002a. National Beach Guidance and Required Performance Criteria for Grants. EPA-823-B-02-004.

USEPA. 2002b. Implementation Guidance for Ambient Water Quality Contamination for Bacteria. EPA-823-B-02-003. DRAFT.

Table 1. Waterborne Pathogens

Pathogen		Disease	Effects
Bacteria	Escherichia coli (enteropathogenic)	Gastroenteritis	Vomiting, diarrhea, death in susceptible populations
	Helicobacter pylori	Gastritis	Diarrhea. Peptic ulcers are a long-term sequela
	Legionella pneumophila	Legionellosis	Acute respiratory illness
	Leptospira	Leptospirosis	Jaundice, fever
	Pseudomonas	Infections in immunocompromised individuals	Urinary tract infections, respiratory system infections, dermatitis, soft tissue infections, bacteremia, and a variety of systemic infections
	Salmonella typhi	Typhoid fever	High fever, diarrhea, ulceration of the small intestine
	Salmonella	Salmonellosis	Diarrhea, dehydration
	Shigella		Bacterial dysentery
	Vibrio cholera	Cholera	Extremely heavy diarrhea, dehydration
	Yersinia enterocolitica	Yersinosis	Diarrhea
Protozoans	Balantidium coli	Balantidiasis	Diarrhea, dysentery
	Cryptosporidium	Cryptosporidiosis	Diarrhea
	Entamoeba histolytica	Ameobiasis (amoebic dysentery)	Prolonged diarrhea with bleeding, abscesses of the liver and small intestine
	Giardia lamblia	Giardiasis	Mild to severe diarrhea, nausea, indigestion
	Naegleria fowleri	Amoebic meningoencephalitis	Fatal disease; inflammation of the brain
Viruses	Adenovirus (31 types)	Respiratory disease	Eye infections, diarrhea
	Astroviruses	Gastroenteritis	Vomiting, diarrhea
	Enteroviruses (67 types, e.g., polio, echo, and Coxsackie viruses)	Gastroenteritis	Diarrhea. Heart anomalies and meningitis are long-term sequela and are very rare
	Hepatitis A and E	Infectious hepatitis	Jaundice, fever
	Caliciviruses (Norwalk- and Sapporo-like viruses)	Gastroenteritis	Vomiting, diarrhea
	Reovirus	Gastroenteritis	Vomiting, diarrhea
	Rotavirus	Gastroenteritis	Vomiting, diarrhea

Appendix A. Michigan List of Waters for Inland Beaches – 2003.

County	Beach Name	Monitoring Status
Allegan	Dumont Lake County Park Beach	Not Monitored
	Ely Lake Campground Beach	Not Monitored
	Gun Lake County Park Beach	Not Monitored
	Little John County Park Beach	Not Monitored
	Pine Point Campground Beach	Not Monitored
Alpena	Beaver Lake Park	Not Monitored
	Day Use Park	Not Monitored
	Long Lake Park	Not Monitored
Antrim	Day Park	Monitored
	Day Park	Not Monitored
	Richardi Park	Monitored
	Thurston Park	Monitored
	Torch River Bridge	Not Monitored
	Torch River Sand Bar	Monitored
	Wooden Shoe Park	Monitored
Arenac	DNR Access	Not Monitored
	Oasis Lake County Park	Not Monitored
	Pine River Public Access	Not Monitored
Barry	Main Beach - Dayuse Area	Not Monitored
	Old Beach - Dayuse Area	Not Monitored
	Yankee Springs Recreation Area Campground Beach	Not Monitored
Bay	Boat Launch	Monitored
	Vet's Park North Bay City	Monitored
	Vet's Park South River Road	Monitored
Benzie	Bellows	Not Monitored
	South Shore near Beulah	Not Monitored
Berrien	Bertrand Park	Not Monitored
	Niles - French Paper	Not Monitored
	Niles - Marmont	Not Monitored
	Paw Paw Lake	Not Monitored
Calhoun	Battle Creek	Not Monitored
	Springport	Not Monitored
Charlevoix	Boyne City (Treatment Plant)	Monitored
	Depot Beach	Monitored
	East Jordan Tourist Park	Monitored
	Elm Point Beach	Monitored
	Ferry Beach	Monitored
	Hayes Township Park	Not Monitored
	Hudson Township Park	Not Monitored
	Melrose Township Park	Not Monitored
	Peninsula Beach	Not Monitored
	Tannery Park	Not Monitored
	Thumb Lake Beach	Monitored
Walloon Lake Public Beach	Monitored	
Washington Street Beach	Not Monitored	

Appendix A. Continued.

County	Beach Name	Monitoring Status
Charlevoix	Whiting Park Beach	Monitored
	Young State Park Beach	Monitored
Cheboygan	Aloha State Park	Not Monitored
	Black Lake SFCG	Not Monitored
	Bluffs Beach	Not Monitored
	Boy Scout Launch	Not Monitored
	Burt Lake State Park	Not Monitored
	Devoe Beach	Not Monitored
	Foot Road Park	Not Monitored
	Hoberts Launch	Not Monitored
	Hoppie's Launch	Not Monitored
	Maple Bay Park	Not Monitored
	Polish Line Beach	Not Monitored
	Ryder's Landing	Not Monitored
	Topinabee Park	Not Monitored
	Webber Lake State Park	Not Monitored
Chippewa	Dukes Lake	Monitored
	Kinross Lake	Monitored
	Monocle Lake	Not Monitored
Clare	Arnold Lake Beach	Not Monitored
	City of Clare Park	Not Monitored
	Hillcrest Public Landing	Not Monitored
	Lake Dodge off of Swallow Road	Not Monitored
	Lake George Public Landing	Not Monitored
	Lake of the Pines	Not Monitored
	Lilly Lake Beach	Not Monitored
	Long Lake Beach	Not Monitored
	Muskegon River Beach	Not Monitored
	Sand Lake Beach	Not Monitored
	Shingle Lake Park	Not Monitored
	Silver Lake Park	Not Monitored
Wilson Lake State Park	Not Monitored	
Eaton	Fox Memorial Park	Not Monitored
	Lincoln Brick Park	Not Monitored
Emmet	Little Traverse Township Beach	Monitored
	Oden Beach	Not Monitored
Genesee	Barnum Lake	Not Monitored
	Beach at Hasler Lake	Not Monitored
	Beach at Pinewood Lake	Monitored
	Bluebell Beach	Monitored
	Bluegill Boat Ramp	Monitored
	Boat Ramp	Monitored
	Buttercup Beach	Monitored
	Camp Copneconic	Monitored
	City Park Beach	Monitored

Appendix A. Continued.

County	Beach Name	Monitoring Status
Genesee	Clover Beach	Monitored
	Copneconic Lake	Not Monitored
	Covenant Hill Camp	Monitored
	Crane Lake	Not Monitored
	Crooked Lake	Monitored
	DNR - Boat Launch at Lake Ponemah	Monitored
	DNR - Boat Launch at Lobdell Lake	Monitored
	DNR Boat Dock	Monitored
	Dollar Lake	Monitored
	Fenton Lake	Not Monitored
	Flagstone Point	Not Monitored
	Golden Rod	Not Monitored
	Hasler Lake	Not Monitored
	Hasler Lake Campground	Monitored
	Kearsley Reservoir	Not Monitored
	Lake Helene	Not Monitored
	Lake Linda	Monitored
	Lake Ponemah	Not Monitored
	Lake Shinangaug	Not Monitored
	Linden Mill Pond	Not Monitored
	Loon Lake	Not Monitored
	Marl Lake	Not Monitored
	McCaslin Lake	Not Monitored
	McKane Lake	Not Monitored
	Mott Lake Stepping Stone	Not Monitored
	Myers Lake	Monitored
	Pine Lake	Not Monitored
	Silver Lake Marina	Monitored
	Smokerise	Not Monitored
	Squaw Lake	Not Monitored
Thread Lake	Not Monitored	
Township Hall	Monitored	
Walleye Pike Dock	Monitored	
West Sister Lake	Monitored	
Gladwin	Beaverton City Park	Not Monitored
	Esty Road Access	Not Monitored
	Gladwin City Park	Not Monitored
	Hoister Lake Beach	Not Monitored
	House Lake	Not Monitored
	Lake Four	Not Monitored
	Lake Lancer	Not Monitored
	Pine Street Public Access	Not Monitored
	Pratt Lake	Not Monitored
	Secord Lake	Not Monitored
Secord Lake - East	Not Monitored	

Appendix A. Continued.

County	Beach Name	Monitoring Status
Gladwin	Trout Lake SFCG	Not Monitored
	Wiggins Lake	Not Monitored
	Wiggins Lake - at Clendening Road	Not Monitored
	Wixon Lake - West	Not Monitored
Ingham	Burchfield Park	Not Monitored
	Lake Lansing Park South	Not Monitored
	Valhalla Park	Not Monitored
Isabella	Coldwater Park	Not Monitored
	Deerfield County Park	Not Monitored
	Herrick County Park	Not Monitored
	Millpond Park	Not Monitored
Kalamazoo	Cold Brook County Park	Monitored
	Fort Custer Recreation Area Beach	Monitored
	Markin Glen County Park	Monitored
	Prarie View County Park	Monitored
	Ramona Park	Monitored
	Robert Morris Park	Monitored
	Ross Township Park	Monitored
	Timber Lake Campground	Monitored
Woods Lake Beach	Monitored	
Kent	Collins Park	Not Monitored
	Lincoln Lake Baptist Camp	Not Monitored
	Lincoln Pines Resort	Not Monitored
	Long Lake County Park	Not Monitored
	Myers Lake County Park	Not Monitored
	Scalley Lake Park	Not Monitored
	Versluis Park	Not Monitored
	Wabasis Lake County Park	Not Monitored
Leelanau	South Bar Lake - South End	Not Monitored
Livingston	Brighton State Recreation Area	Monitored
	Camp Innisfree	Monitored
	Camp Talahi	Monitored
	Green Valley Camp	Monitored
	Howell City Park	Monitored
	Howell Nature Center	Monitored
	Island Lake Recreation Area - Kent Lake	Monitored
	Island Lake Recreation Area - Spring Mill Pond	Monitored
	Lake Chemung Outdoor Resort	Monitored
	Lakelands Golf & Country Club	Monitored
	Nazarene Camp	Monitored
	Pine Hills Camp	Monitored
	Providence Medical Center	Monitored
	Taylor's Beach	Monitored
Varsity Day Camp	Monitored	
Waldenwoods Resort	Monitored	

Appendix A. Continued.

County	Beach Name	Monitoring Status
Livingston	Wildwood Ranch	Monitored
Macomb	Stoney Creek Metropark-Baypoint Beach	Monitored
	Stoney Creek Metropark-Eastwood Beach	Monitored
Marquette	Marquette Tourist Park Beach	Not Monitored
	Shiras Swimming Area	Not Monitored
Menominee	Hermansville Beach	Not Monitored
	Shakey Lakes Campground	Not Monitored
Monroe	Camp Lord Willing	Not Monitored
	Covered Wagon Campground	Not Monitored
	Heath Beach	Monitored
	K.C. Campground	Not Monitored
	Monroe KOA Campground	Not Monitored
	Pirolli's Campground	Monitored
	The Vine	Not Monitored
	Totem Pole Campground Pond	Monitored
	Wilderness Retreat Campground	Monitored
Montmorency	Clear Lake Day Use	Not Monitored
	Clear Lake State Park	Not Monitored
	Crooked Lake Beach	Not Monitored
	East Twin Beach	Not Monitored
Muskegon	Blue Lake County Park Beach	Not Monitored
	Duck Lake State Park Beach	Not Monitored
	Fox Lake Park Beach	Not Monitored
	Goodrich Park Beach	Not Monitored
	Mona Lake Park Beach	Not Monitored
	Moore County Park Beach	Not Monitored
	Ross Park Beach	Not Monitored
	Snug Harbor Park Beach	Not Monitored
	Twin Lake County Park Beach	Not Monitored
	Wolf Lake Park Beach	Not Monitored
Oakland	657 Dunleavy	Not Monitored
	Addison Oaks County Park	Monitored
	Alpha	Not Monitored
	Bald Mountain Recreation Area	Monitored
	Banker's Subdivision	Not Monitored
	Bay Court Park	Monitored
	Birch Park	Not Monitored
	Bird Island Subdivision	Not Monitored
	Bloomfield Parks & Recreation/West Hills High School	Monitored
	Brendle Heights - Hillwood	Not Monitored
	Brown's Landing Mobile Home Park	Monitored
	Burley & Barnsbury Streets	Not Monitored
	Camp Agawam Boy Scout Camp	Monitored
	Camp Dearborn - Lake #1	Monitored
	Camp Dearborn - Lake #5	Monitored

Appendix A. Continued.

County	Beach Name	Monitoring Status
Oakland	Camp Gordanwood	Monitored
	Camp Maas - Rodecker	Monitored
	Camp Maas- Sobell Beach	Monitored
	Camp Nahelu	Monitored
	Camp Oakland - Summer	Monitored
	Camp Ohiyesa - North	Monitored
	Camp Wathana	Monitored
	Cass Lake Woods	Not Monitored
	Cedar Crest Subdivision	Not Monitored
	Christ the King Church Camp	Monitored
	Cloister-on-the-Lakes	Not Monitored
	Cranberry Lake Village	Not Monitored
	Crescent Highlands	Not Monitored
	Crescent Lake Park	Not Monitored
	Crystal Echo	Not Monitored
	Crystal Echo (The Point)	Not Monitored
	Cunningham Park	Monitored
	Davisburg Village Beach (Hart Community Center)	Monitored
	Dodge Park #4	Monitored
	Doll's Dock (Skip's Landing)	Monitored
	E.V. Mercer City Beach	Monitored
	Family Park	Not Monitored
	Ferndale	Monitored
	Finnish Day Camp	Monitored
	Green Acres/Green Valley Park	Not Monitored
	Greens Park Village Beach	Monitored
	Groveland Oaks County Park - Paradise Beach	Monitored
	Haas Lake Park #1	Monitored
	Haas Lake Park #2	Monitored
	Haas Lake Park #3	Monitored
	Hammond Estates	Not Monitored
	Harris Park	Not Monitored
	Harvey Lake Estates	Not Monitored
	Harvey Lake Heights	Not Monitored
	Heather Lake Estates	Monitored
	Holly Recreation Area - Wildwood Beach	Monitored
	Holly Recreation Area - Heron Beach	Monitored
	Holly Township Beach	Monitored
	Idlewild Subdivision	Not Monitored
	Independence Oaks County Park	Monitored
Independence Township Village Beach	Monitored	
Indianwood	Not Monitored	
Jacksina Subdivision	Not Monitored	
Keego Harbor City Beach	Not Monitored	
Keego Harbor Trailer Park	Not Monitored	

Appendix A. Continued.

County	Beach Name	Monitoring Status
Oakland	Kensington - Maple Beach	Monitored
	Kensington - Martindale Beach	Monitored
	Lake Angelus Lakeview Estates	Not Monitored
	Lake Braemar Estates - Tamryn Court	Not Monitored
	Lake Oakland Heights	Not Monitored
	Lake Oakland Shores	Not Monitored
	Lake Orion Heights	Not Monitored
	Lakeshore Park	Monitored
	Lakeview	Monitored
	Lakeview Recreation	Not Monitored
	Lakewood Farms - Crocus Street	Not Monitored
	Lakewood Farms - Sharon Street	Not Monitored
	Lakewood Village	Not Monitored
	Lakewood Village Subdivision	Not Monitored
	Lanarh Street	Not Monitored
	Ledgewood	Not Monitored
	Lotus Park	Not Monitored
	Mary K. Subdivision	Not Monitored
	Meagher Park/Woodland Manor	Not Monitored
	Mission Springs Subdivision	Not Monitored
	Mountain View	Not Monitored
	North	Not Monitored
	North Cove	Not Monitored
	Oakridge Subdivision	Not Monitored
	Outlot A	Not Monitored
	Pawlaks Campground	Not Monitored
	Pinecrest Shores	Not Monitored
	Pioneer Highlands	Monitored
	Pleasant Lake Highlands	Not Monitored
	Pleasant Lake Manor	Not Monitored
	Pleasant Lake Woods	Not Monitored
	Pontiac Recreation Area	Monitored
	Powers Picnic Sites	Monitored
	Proud Lake Recreation Area Campground	Monitored
	Ravinewood East	Not Monitored
	Ravinewood West	Not Monitored
	Rolling Acres	Not Monitored
	Rose Hill Center	Monitored
	Scripter Village Park Township Beach	Monitored
	Seven Lakes Park	Monitored
Seven Lakes State Park - Campground	Monitored	
Shady Beach	Not Monitored	
Sherwood Boat Ramp	Not Monitored	
Shore Cliffs Estates	Not Monitored	
Shores at Bay Point	Not Monitored	

Appendix A. Continued.

County	Beach Name	Monitoring Status
Oakland	Silver Hill Road	Not Monitored
	Silver Valley Subdivision	Not Monitored
	South	Not Monitored
	St. Mary's	Not Monitored
	Stanley Beach	Not Monitored
	Stony	Not Monitored
	Stony Lake Park	Monitored
	Sunny Beach #1 - Eston Road	Not Monitored
	Sunny Beach #2 - Clarkston Road	Not Monitored
	Sunset Club	Not Monitored
	Sunset Subdivision	Not Monitored
	Sylvan-on-the-Lakes	Not Monitored
	Teeple Lake Recreation Area - Highland State Park	Monitored
	Thelma Spencer Park	Monitored
	Tripps Subdivision Park	Not Monitored
	Twin Beach Park	Not Monitored
	Union Lake Heights Subdivision #1	Not Monitored
	Union Lake Heights Subdivision #2	Not Monitored
	Upland Hills Farm	Monitored
	Walnut Lake Park	Not Monitored
	Waterford Hill	Not Monitored
	West Acres	Not Monitored
	Westwood Manor	Not Monitored
Whipple Shores Subdivision	Not Monitored	
White Lake Trailer Park	Not Monitored	
Whitney Street	Not Monitored	
Willow Beach Subdivision	Not Monitored	
Osceola	Center Lake Park	Not Monitored
	Crawford Park	Not Monitored
	Crittenton Park	Not Monitored
	Diamond Lake	Not Monitored
	Rose Lake County Park	Not Monitored
	Sunrise Lake Park	Not Monitored
Otsego	Otsego County Park	Monitored
	Otsego State Park	Monitored
Ottawa	8th Avenue	Monitored
	Dutton Park	Monitored
	Georgetown Community Park	Not Monitored
	Grand River Park	Not Monitored
	Grose Park	Monitored
	Holland State Park	Monitored
	Lake Avenue	Monitored
	Maplewood Lake Park	Monitored
	Pottawattomie Park	Monitored
Riverside Park	Not Monitored	

Appendix A. Continued.

County	Beach Name	Monitoring Status
Ottawa	Spring Lake Beach	Not Monitored
	Tunnel Park	Not Monitored
Presque Isle	Grand Lake Northwest	Not Monitored
	Grand Lake Public Access	Not Monitored
	Lake May Public Access	Not Monitored
	Millersburg Park	Not Monitored
	Ocquoec Falls Park	Not Monitored
	Onaway State Park	Not Monitored
	Shoepac Lake Campground	Not Monitored
Roscommon	Tomahawk Lake Campground	Not Monitored
	Beaver Creek	Not Monitored
	Denton Township Public Beach	Not Monitored
	Denton Township Public Fishing Site	Not Monitored
	DNR Public Fishing Site	Not Monitored
	Gerrish Township Park	Not Monitored
	Higgins Lake Public Fishing Site	Not Monitored
	Houghton Lake Heights	Not Monitored
	Houghton Lake Public Fishing Site	Not Monitored
	Kelly Beach	Not Monitored
	Phoenix Park	Not Monitored
Richfield Township Public Fishing Site	Not Monitored	
South Higgins Lake State Park	Not Monitored	
State Forest Campgrounds	Not Monitored	
Saginaw	Center Road	Monitored
	Cole Park	Monitored
	East Road	Monitored
	Haithco Recreation Area	Monitored
	Heritage Park	Monitored
	Hulien Road	Monitored
	Imerman Park	Monitored
	Lake of Dreams Campground	Monitored
	Lee Street	Monitored
	Ringwood Forest County Park	Monitored
	Wickes Park	Monitored
Zilwaukee River Front Park	Monitored	
St. Clair	Beechgrove Campground	Monitored
	Fort Trodd Campground North	Monitored
	Fort Trodd South	Monitored
	Kimball Township Pond	Monitored
Washtenaw	Bruin Lake	Monitored
	Half Moon Lake	Monitored
	Independence Lake Park	Monitored
	Silver Lake	Monitored
	Sugarloaf Campground	Monitored
Wayne	Van Buren Township Park	Not Monitored

Appendix B. Michigan List of Waters for Great Lakes Beaches – 2003.

County	Beach Name	Monitoring Status
Alcona	Black River Public Access	Not Monitored
	Harrisville State Park	Monitored
Alger	Au Train Beach	Not Monitored
	Bay Furnace Recreation Area	Not Monitored
	Christmas Beach	Not Monitored
	City Lakeshore Recreation Area	Not Monitored
	Grand Marais Harbor Beach	Not Monitored
	Grand Marais Township Beach	Not Monitored
	Hurricane Campground Beach	Not Monitored
	Munising Beach	Not Monitored
	Roadside Park	Not Monitored
	Sand Point Beach	Not Monitored
	Sullivans Landing	Not Monitored
Twelve Mile Beach	Not Monitored	
Allegan	Douglas Beach	Not Monitored
	Oval Beach	Not Monitored
	Pier Cove Beach	Not Monitored
	West Side County Park Beach	Not Monitored
Alpena	Bay View Park	Not Monitored
	Blair Street Park	Monitored
	Michekewis Beach	Monitored
	Ossineke Beach	Monitored
	Starlite Beach	Monitored
	Sunken Lake Beach	Not Monitored
Thompson Park	Monitored	
Antrim	Antrim Creek Natural Area	Not Monitored
	Banks Township Park	Monitored
	Barnes Park (Eastport)	Monitored
	Elk Rapids	Monitored
	Elk Rapids Bathing Beach	Not Monitored
	Elk Rapids County Park	Not Monitored
	Elk Rapids Park	Not Monitored
	Erickson Road	Not Monitored
	Lobe	Not Monitored
	Michigan Trail	Not Monitored
	Nature Preserve	Not Monitored
	North Bay Shore (Conservancy)	Not Monitored
	O'Dell Road	Not Monitored
Road Crossing near Winters Road	Not Monitored	
Arenac	Arenac County Park	Monitored
	Bessinger Road Beach	Monitored
	Dyer Road Beach	Monitored
	Foster Road Beach	Monitored
	Hammel Beach Road Access	Monitored
	Pump Station	Not Monitored
	Singing Bridge Beach	Monitored
	Twining Road Beach	Monitored

Appendix B. Continued.

County	Beach Name	Monitoring Status
Arenac	Whites Beach	Monitored
Baraga	Arvon Township Park	Monitored
	Baraga State Park	Monitored
	L'Anse Waterfront Park	Monitored
	Second Sands Beach	Monitored
Bay	Bay City State Recreation Area	Monitored
	Brissette Beach Township Park	Monitored
	Pinconning Park	Monitored
	South Linwood Beach Township Park	Monitored
	Wenona Beach	Monitored
Benzie	Alberta Village Beach and Bluffs	Not Monitored
	Esch Road/Otter Creek	Monitored
	Frankfort	Monitored
	North Bar	Monitored
	Platte River Point	Monitored
	Point Betsie Lighthouse Beach	Not Monitored
	Zettenberg Preserve	Not Monitored
Berrien	Cherry Beach	Monitored
	Grand Beach	Monitored
	Hagar Township Park	Monitored
	Harbert Beach	Monitored
	Jean Klock Park	Monitored
	Lincoln Township Park	Monitored
	Lions Park	Monitored
	Michiana Village	Monitored
	New Buffalo City	Monitored
	Rocky Gap	Monitored
	Silver Beach	Monitored
	Tiscornia Park	Monitored
	Warren Dunes	Monitored
Weko Beach	Monitored	
Charlevoix	Beaver Island Public Beach	Not Monitored
	Bill Wagner Memorial Campground Beach	Not Monitored
	Fisherman's Island State Park	Monitored
	Harbor Beach	Not Monitored
	Iron Ore Bay Beach	Not Monitored
	Lake Michigan Beach	Monitored
	Mt. McSauba Beach	Monitored
	Norwood Park	Monitored
Cheyboygan	Cheyboygan City Park	Monitored
	Cheyboygan State Park	Monitored
	Ditta Park	Monitored
	Lake Huron	Not Monitored
	Mackinaw City Beach	Not Monitored
	Mackinaw City Lighthouse Park	Monitored
	Mill Creek Campground	Monitored
	Wawatam City Park	Monitored

Appendix B. Continued.

County	Beach Name	Monitoring Status
Chippewa	BayView Campground	Monitored
	Big Pines Beach	Monitored
	Big Shoal Cove Beach	Monitored
	Brimley State Park	Monitored
	Detour Albany Beach	Monitored
	Drummond Island Township Park	Monitored
	Four Mile Beach	Monitored
	Sherman Park	Monitored
	Sugar Island Township Park	Monitored
Delta	Escanaba Bathing Beach	Not Monitored
	Fayette State Park	Not Monitored
	Fuller Park	Not Monitored
	Gladstone Bathing Beach	Not Monitored
	Peninsula Point	Not Monitored
	Twin Springs Campground and Bathing Beach	Not Monitored
Emmet	Bliss Township Beach	Not Monitored
	Church Beach	Not Monitored
	Cross Village Beach	Monitored
	Harbor Springs Beach (Zorn Park)	Monitored
	Mackinaw City Beach #1	Monitored
	Mackinaw City Beach #2	Monitored
	Magnus Park	Monitored
	Middle Village Park	Monitored
	Petoskey Harbor	Not Monitored
	Petoskey State Park	Monitored
	Readmond Township Beach	Not Monitored
	Thorne Swift Preserve	Not Monitored
	Wilderness State Park	Monitored
Zoll Street Beach	Not Monitored	
Gogebic	Black River Harbor Beach	Monitored
	Little Girls Point Park	Monitored
Grand Traverse	Acme Roadside Park (DNR)	Not Monitored
	Acme Roadside Park and Beach MDOT	Not Monitored
	Bayside Acme Township Park	Not Monitored
	Bowers Harbor Public Access	Not Monitored
	Bryant Park Beach	Monitored
	Clinch Park	Monitored
	Deep Water Point	Not Monitored
	DNR Launch/Beach Center Road	Not Monitored
	East Bay Park	Not Monitored
	East Bay State Park	Monitored
	East Bay Township Four Mile Road	Not Monitored
	Haserot Park	Not Monitored
	Kroupa Road Access	Not Monitored
	Marion Island Bay Park	Not Monitored
	Milliken	Monitored
	Old Mission Road	Not Monitored
Penninsula Volunteer Fire Station Point #2	Not Monitored	

Appendix B. Continued.

County	Beach Name	Monitoring Status
Grand Traverse	Rose Street Access	Not Monitored
	Sayler Park	Not Monitored
	Senior Center	Monitored
	Sunset Park	Not Monitored
	Swaney Road	Not Monitored
	West Grand Traverse Bay Access Site	Not Monitored
	West End Beach	Monitored
	Yuba Beach	Monitored
Houghton	Agate Beach	Monitored
	Chassell Beach	Monitored
	Dollar Bay Beach	Monitored
	Hancock City Beach	Monitored
	Houghton City Beach	Monitored
	Lake Linden Campground Beach	Monitored
	McLain State Park Beach	Monitored
Huron	Bird Creek County Park	Monitored
	Caseville County Park	Monitored
	County Road End	Not Monitored
	Geiger Road Public Access	Not Monitored
	Grindstone Public Access	Not Monitored
	Harbor Beach City Park	Monitored
	Harbor Beach Marina	Not Monitored
	Helena Road End	Not Monitored
	Jenks County Park	Monitored
	Kinch Road End	Not Monitored
	Lighthouse County Park	Monitored
	McGraw County Park	Monitored
	Mud Creek Public Access	Not Monitored
	Oak Beach County Park	Monitored
	Philip County Park	Monitored
	Port Crescent State Park-Camping Area	Monitored
	Port Crescent State Park-Day Use	Monitored
	Sleeper State Park	Monitored
	Stafford County Park	Not Monitored
	Thompson Park	Monitored
Wagener County Park	Not Monitored	
Iosco	East Tawas City Park	Monitored
	MDOT Roadside Park	Monitored
	Oscoda Township Beach	Monitored
	Tawas City Park	Monitored
	Tawas Point State Park - Day Use Area	Monitored
	Tawas Point State Park Campground	Monitored
Keweenaw	Bete De Gris Beach	Monitored
	Eagle Harbor Beach	Monitored
	Fort Wilkens State Park	Monitored
Leelanau	4th Street Beach Northport	Not Monitored
	5th Street Beach Northport	Not Monitored
	7th Street Beach Northport	Not Monitored

Appendix B. Continued.

County	Beach Name	Monitoring Status
Leelanau	Bay Front Park	Not Monitored
	Boughy Park & Beach	Not Monitored
	Cathead Bay, Leelanau State Park	Not Monitored
	Cedar Street Beach	Not Monitored
	Christmas Cove	Not Monitored
	County Road 669	Monitored
	County Road 651	Monitored
	Elmwood/Greilikville Park & Beach	Not Monitored
	G. Marsten Dame Marina	Not Monitored
	Gils Pier	Not Monitored
	Glen Arbor/Manitou Blvd. Beach	Not Monitored
	Graham Green Park	Not Monitored
	Haserot Beach, Rose Street	Not Monitored
	Lake Michigan (Near Empire)	Monitored
	Lake Street Beach, Glen Arbor	Not Monitored
	Leelanau State Park, Lighthouse	Not Monitored
	Leland Harbor	Not Monitored
	M-DOT Roadside Park & Beach	Not Monitored
	Northport Bay	Monitored
	Smith Street Beach Northport	Not Monitored
South Shore Park	Not Monitored	
Sutton Bay Marina Park & Beach South	Not Monitored	
Suttons Bay Park	Monitored	
Suttons Bay Public Launch and Beach	Not Monitored	
Luce	Lake Superior Campground Beach	Not Monitored
	Muskallonge Lake State Park Beach	Not Monitored
	Two Hearted River Campground Beach	Not Monitored
Mackinac	Kiwanis Beach	Not Monitored
Macomb	HCMA - Metropolitan Beach Metropark	Monitored
	New Baltimore Park Beach	Monitored
	SCS Blossom Health Beach	Monitored
	St. Clair Shores Memorial Park Beach	Monitored
Manistee	Arcadia Park	Monitored
	Bar Lake Outlet	Monitored
	Fifth Avenue Beach	Monitored
	First Street Beach	Monitored
	Magoon Creek	Monitored
	Onekama	Monitored
	Pierport	Monitored
	Sundling Park	Monitored
Marquette	Marquette South Beach	Monitored
	McCarty's Cove	Monitored
	North Beach	Monitored
	North of Picnic Rocks	Monitored
	Picnic Rocks	Monitored
Mason	Bass Lake Outlet Beach	Monitored
	Buttersville Park Beach	Monitored
	Ludington State Park	Monitored

Appendix B. Continued.

County	Beach Name	Monitoring Status
Mason	Manistee National Forest Beach	Monitored
	South Pier Beach	Monitored
	South Summit Beach	Monitored
	Sterns Park Beach	Monitored
	Summit Township Beach	Monitored
Menominee	Bailey Park	Not Monitored
	Fox Park	Not Monitored
	Henes Park	Not Monitored
	Klienke Park	Not Monitored
	Memorial Beach	Not Monitored
	Victory Beach	Not Monitored
	Wells State Park	Not Monitored
Monroe	Luna Pier City Beach	Monitored
	Sterling State Park	Monitored
Muskegon	Bronson/Kruse Park	Monitored
	Duck Lake Channel Beach	Monitored
	Lake Harbor Park	Monitored
	Medbury Park Beach	Monitored
	Meinert County Park	Monitored
	Muskegon State Park	Monitored
	Pere Marquette Park	Monitored
	Pioneer County Park	Monitored
	PJ Hoffmaster State Park	Monitored
White River Lighthouse	Monitored	
Oceana	Claybanks	Monitored
	Lighthouse Beach	Monitored
	Mears State Park	Monitored
	Silver Creek Channel	Monitored
	Stony Lake Channel	Monitored
	Whiskey Creek	Monitored
Ontonagon	Ontonagon Township Park and Campground	Monitored
	Porcupine Mountains State Park	Monitored
Ottawa	Grand Haven City Beach	Monitored
	Grand Haven State Park	Monitored
	Holland State Park	Monitored
	Kirk Park	Monitored
	North Beach Park	Monitored
	Tunnel Park	Monitored
Presque Isle	Hoelt State park	Monitored
	Lakeside Park	Monitored
Sanilac	Birch Beach South #1	Monitored
	Delaware Park	Monitored
	Forester County Park	Monitored
	Forestville Beach	Monitored
	Lexington Beach	Monitored
	Lexington County Park	Monitored
	Port Sanilac Park	Monitored
Schoolcraft	Manistique Town Beach	Not Monitored

Appendix B. Continued.

County	Beach Name	Monitoring Status
Schoolcraft	Manistique Township Park	Not Monitored
	Michigan Shores Road Beach	Not Monitored
	Roadside Park Beach	Not Monitored
	Rogers Beach	Not Monitored
St. Clair	Burtchville Township Park	Monitored
	Chrysler Park Beach	Monitored
	Conger-Lighthouse Beach	Monitored
	Holland Road Beach	Monitored
	Jeddo Road Beach	Monitored
	Keewahdin Road Beach	Monitored
	Krafft Road Beach	Monitored
	Lakeport State Campground	Monitored
	Lakeport State Park	Monitored
	Lakeside Beach	Monitored
	Marine City Beach	Monitored
	Marine City Diving Area	Monitored
	Metcalf Road Beach 1	Monitored
Washington Street Beach	Monitored	
VanBuren	Covert Township Park Beach	Not Monitored
	South Haven North Beach	Not Monitored
	South Haven South Beach	Not Monitored
	Van Buren State Park Beach	Not Monitored
Wayne	Belle Isle Beach	Not Monitored
	Pier Park	Not Monitored

Appendix C. CMI-CWF Grants for Great Lake and Inland Lake Beaches (2000 and 2001) and Inland Lake Beaches (2003).

Table 1. 2000 CMI-CWF Grants.

2000 CMI-CWF Grantees	Requested Budget Amount	Granted Amount	Total Monitored Beaches
Berrien County Health Department	\$49,012	\$24,450	11
Central Michigan District Health Department	\$94,115	\$46,363	66
Chippewa County Health Department	\$15,882	\$15,882	8
City of Marquette	\$19,071	\$19,071	7
Grand Traverse Bay Watershed Initiative	\$34,768	\$34,768	17
Huron County Health Department	\$18,407	\$18,407	11
Kent County Health Department	\$5,820	\$5,820	9
Macomb County Health Department	\$57,649	\$28,239	6
TOTAL	\$294,724	\$193,000	135

Table 2. 2001 CMI-CWF Grants.

2000 CMI-CWF Grantees	Requested Budget Amount	Granted Amount	Total Monitored Beaches
District Health Department #4	\$16,782	\$16,782	44
Kalamazoo County Human Services Department	\$35,000	\$35,000	21
Muskegon County Health Department	\$9,073	\$9,073	14
Northwest Michigan Community Health Agency	\$14,079	\$14,079	22
St. Clair County Health Department	\$25,000	\$25,000	26
TOTAL	\$99,934	\$99,934	127

Table 3. 2003 CMI-CWF Grants.

2000 CMI-CWF Grantees	Requested Budget Amount	Granted Amount	Total Monitored Beaches
Barry-Eaton District Health Department	\$14,812.51	\$14,812.51	7
Branch, Hillsdale, St. Joseph Community Health Agency	\$48,690.41	\$10,000	51
Central Michigan District Health Department	\$48,546	\$18,375	45
Chippewa County Health Department	\$12,833.41	\$12,833.41	4
District Health Department #4	\$22,090.69	\$10,000	13
Genesee County Health Department	\$28,849	\$10,000	21
Macomb County Health Department	\$6,543	\$6,543	2
Muskegon County Health Department	\$25,023	\$10,000	15
Oakland County Health Division	\$17,462.68	\$14,725.49	76
Ottawa County Health Department	\$7,403	\$5,544	10
TOTAL	\$232,253.70	\$112,833.41	244

Appendix D. BEACH Act Grants for Great Lakes Beaches.

Table 1. 2003 BEACH Act Grants.

2003 BEACH Act Grantees	Requested Budget Amount	Granted Amount	Total Monitored Beaches
Bay County Health Department	\$16,410	\$12,000	6
Berrien County Health Department	\$17,732	\$16,368	13
Central Michigan District Health Department	\$10,152	\$12,152	8
Chippewa County Health Department	\$19,564.38	\$14,590.56	9
City of Marquette	\$11,371.40	\$8,551.20	5
District Health Department #2	\$19,899.75	\$16,000	8
District Health Department #4	\$35,656.46	\$23,000	13
District Health Department #10	\$41,721	\$24,928.11	20
Grand Traverse Bay Watershed	\$23,695	\$23,695	12
Huron County Health Department	\$41,061	\$23,000	13
Macomb County Health Department	\$23,525	\$10,000	4
Muskegon District Health Department	\$11,371	\$11,371	10
Northwest Michigan Community Health Agency	\$24,930.93	\$15,730.93	23
Sanilac County Health Department	\$15,817	\$13,817	7
St. Clair County Health Department	\$24,094.50	\$23,000	13
Western Upper Peninsula District Health Department	\$27,632.79	\$21,000	18
TOTAL	\$367,634.21	\$269,203.80	182

Table 2. 2004 BEACH Act Grants.

2003 BEACH Act Grantees	Requested Budget Amount	Granted Amount	Total Monitored Beaches
Bay County Health Department	\$11,082.38	\$11,082.38	6
Berrien County Health Department	\$36,212	\$23,104	19
Central Michigan District Health Department	\$13,899	\$13,899	8
Chippewa County Health Department	\$31,250.17	\$10,944	9
City of Marquette	\$13,848.56	\$6,080	5
District Health Department #2	\$28,042.10	\$10,944	9
District Health Department #4	\$21,293.29	\$15,808	13
District Health Department #10	\$24,999.50	\$24,999.50	23
Huron County Health Department	\$26,210.20	\$10,944	12
Macomb County Health Department	\$24,490	\$4,864	4
Muskegon County Health Department	\$15,000	\$15,000	12
Northwest Michigan Community Health Agency	\$15,649.65	\$15,649.65	26
Ottawa County Health Department	\$10,246.33	\$10,246.33	9
Public Health, Delta and Menominee Counties	\$12,937.18	\$12,937.18	13
Sanilac County Health Department	\$15,146.74	\$8,512	7
St. Clair County Health Department	\$24,641.24	\$17,024	14
The Watershed Center Grand Traverse Bay	\$22,035	\$15,808	13
Wayne County Health Department	\$10,182	\$3,651	3
Western Upper Peninsula District Health Department	\$21,634.92	\$13,376	11
TOTAL	\$378,800.26	\$244,873.04	216

Appendix E. Exceedances of WQS (300 *E. coli* per 100 ml daily mean) for Inland and Great Lake Beaches during 2003.

County	Water Body	Location	Exceedance Date	<i>E. coli</i> per 100 ml
Alpena	Lake Huron	Blair Street Park	8/6/03	1293
		Blair Street Park	9/4/03	351
Arenac	Lake Huron - Saginaw Bay	Bessinger Road Beach	8/12/03	547
		Dyer Road Beach	8/12/03	743
		Singing Bridge Beach	6/26/03	320
		Singing Bridge Beach	7/9/03	330
		Singing Bridge Beach	8/6/03	317
		Twining Road Beach	7/9/03	758
		Whites Beach	6/5/03	873
Baraga	Lake Superior - L'Anse Bay	L'Anse Waterfront Park	7/15/03	2100
Bay	Kawkawlin River	Boat Launch	6/9/03	620
		Boat Launch	6/11/03	384
		Boat Launch	7/9/03	361
		Boat Launch	7/22/03	387
	Lake Huron - Saginaw Bay	Bay City State Recreation Area	7/9/03	1361
		Bay City State Recreation Area	7/33/03	398
		Brissette Beach Township Park	7/9/03	2027
		Brissette Beach Township Park	7/22/03	773
		Brissette Beach Township Park	8/11/03	1186
		South Linwood Beach Township Park	7/22/03	924
		South Linwood Beach Township Park	8/11/03	318
		Wenona Beach	7/9/03	608
		Wenona Beach	7/22/03	904
		Wenona Beach	8/25/03	350
Benzie	Lake Michigan	North Bar	8/11/03	339
Berrien	Lake Michigan	Grand Beach	7/22/03	386
		Michiana Village	7/22/03	330
		New Buffalo City	6/16/03	480
		Warren Dunes	6/10/03	548
Charlevoix	Lake Charlevoix	Young State Park Beach	6/26/03	417
Cheboygan	Lake Huron	Mackinaw City Lighthouse Park	8/21/03	1000
		Mackinaw City Lighthouse Park	8/28/03	1000
Chippewa	Lake Superior	Bayview Campground	9/16/03	318
		Brimley State Park	6/9/03	964
		Brimley State Park	8/4/03	969

Appendix E. Continued.

County	Water Body	Location	Exceedance Date	<i>E. coli</i> per 100 ml	
Chippewa	Lake Superior	Brimley State Park	9/16/03	857	
		Sherman Park	9/16/03	516	
	Lake Huron	Drummond Island Township Park	9/3/03	301	
		St. Marys River	Four Mile Beach	8/4/03	510
			Four Mile Beach	9/23/03	2275
		Sugar Island Township Park	7/14/03	1444	
		Sugar Island Township Park	8/4/03	1000	
		Sugar Island Township Park	9/16/03	986	
		Sugar Island Township Park	9/23/03	1986	
		Genesee	Mott Lake	Bluebell Beach	6/23/03
Bluebell Beach	8/18/03			377	
Bluebell Beach	8/25/03			1302	
Bluebell Beach	9/22/03			340	
Grand Traverse	Grand Traverse Bay – West Arm	Bryant Park Beach	9/15/03	1178	
		Clinch Park	9/15/03	374	
		Senior Center	8/11/03	1478	
		West End Beach	6/9/03	373	
	Grand Traverse Bay – East Arm	East Bay State Park	6/9/03	518	
		East Bay State Park	9/15/03	326	
		Milliken	6/9/03	2419	
		Milliken	6/30/03	433	
		Milliken	7/21/03	405	
		Yuba Beach	6/9/03	537	
Huron	Lake Huron	Caseville County Park	8/12/03	487	
		McGraw County Park	8/27/03	917	
		Oak Beach County Park	8/12/03	568	
		Oak Beach County Park	8/27/03	825	
		Port Crescent State Park – Camping Area	7/14/03	417	
		Port Crescent State Park – Camping Area	7/16/03	701	
		Thompson Park	8/12/03	406	
Kalamazoo	Swimmers Lake	Markin Glen County Park	8/12/03	1644	
		Markin Glen County Park	8/13/03	473	
Leelanau	Lake Michigan	Lake Michigan (Near Empire)	7/7/03	324	
Livingston	Church Lake	Wildwood Ranch	8/6/03	510	
		Wildwood Ranch	8/13/03	7650	
Macomb	Lake St. Clair	HCMA – Metropolitan Beach Metropark	5/5/03	568	
		HCMA – Metropolitan Beach Metropark	7/30/03	353	

Appendix E. Continued.

County	Water Body	Location	Exceedance Date	<i>E. coli</i> per 100 ml
Macomb	Lake St. Clair	HCMA – Metropolitan Beach Metropark	8/6/03	466
		HCMA – Metropolitan Beach Metropark	9/8/03	1069
		HCMA – Metropolitan Beach Metropark	9/10/03	488
		HCMA – Metropolitan Beach Metropark	9/24/03	321
		New Baltimore Park Beach	8/13/03	307
		New Baltimore Park Beach	8/14/03	497
		SCS Blossom Heath Beach	5/19/03	368
		SCS Blossom Heath Beach	7/28/03	662
		St. Clair Shores Memorial Park Beach	5/21/03	1356
		St. Clair Shores Memorial Park Beach	6/2/03	2023
		St. Clair Shores Memorial Park Beach	8/4/03	601
		St. Clair Shores Memorial Park Beach	8/6/03	547
		St. Clair Shores Memorial Park Beach	8/18/03	367
	Stoney Creek Lake – Impoundment	Stoney Creek Metropark – Baypoint Beach	7/28/03	408
Marquette	Lake Superior	McCarty's Cove	7/11/03	403
		Picnic Rocks	7/11/03	357
Muskegon	Lake Michigan	Bronson/Kruse Park	6/24/03	569
		Lake Harbor Park	7/15/03	301
Oakland	Tommys Lake	Camp Agawam Boy Scout Camp	7/22/03	347
	Walled Lake	E.V. Mercer City Beach	7/1/03	338
	Bush Lake	Holly Township Beach	7/22/03	535
	Sylvan Lake	Pioneer Highlands	6/30/03	1430
		Pioneer Highlands	7/1/03	794
		Pioneer Highlands	7/7/03	870
		Sylvan Shores Improvement Association	6/23/03	360
Ottawa	Lake Macatawa	Dutton Park	8/26/03	709
	Lake Michigan	Grand Haven City Beach	6/10/03	363
		Grand Haven City Beach	8/11/03	446
		Holland State Park	8/11/03	388
		Kirk Park	8/11/03	1121
		Tunnel Park	8/11/03	395
	Maplewood Lake	Maplewood Lake Park	7/29/03	763
		Maplewood Lake Park	8/5/03	546
		Maplewood Lake Park	8/18/03	521
Saginaw	Tittabawassee River	Center Road	5/13/03	714
		Imerman Park	5/13/03	637
		Imerman Park	9/23/03	361

Appendix E. Continued.

County	Water Body	Location	Exceedance Date	<i>E. coli</i> per 100 ml	
Saginaw	Shiawassee River	Cole Park	8/26/03	519	
		Cole Park	9/23/03	324	
	Cass River	East Road	5/14/03	689	
		East Road	6/11/03	303	
		Heritage Park	5/14/03	873	
		Heritage Park	6/11/03	521	
		Heritage Park	7/23/03	337	
		Heritage Park	9/17/03	741	
	Bad River	Heritage Park	9/24/03	2419	
		Hulien Road	5/13/03	2419	
		Hulien Road	8/26/03	326	
		Ringwood Forest County Park	6/10/03	601	
		Ringwood Forest County Park	8/5/03	334	
		Ringwood Forest County Park	8/12/03	1643	
		Lee Street	5/14/03	322	
	Saginaw River	Wickes Park	5/14/03	452	
		Wickes Park	9/24/03	314	
Wickes Park		10/15/03	714		
Zilwaukee River Front Park		5/14/03	419		
Sanilac		Lake Huron	Forester County Park	6/10/03	1414
			Forester County Park	6/13/03	1021
	Lexington Beach	8/5/03	614		
	Port Sanilac Park	6/10/03	1308		
St. Clair	St. Clair River	Chrysler Park Beach	6/16/03	426	
	Fort Trodd Lake	Fort Trodd Campground North	7/22/03	663	
		Fort Trodd South	7/22/03	851	
		Jeddo Road Beach	7/28/03	625	
	Lake Huron	Lakeport State Park	8/11/03	495	
		Lakeside Beach	7/7/03	392	
		Lakeside Beach	7/9/03	451	
		Kimball Pond	Kimball Township Pond	7/22/03	757

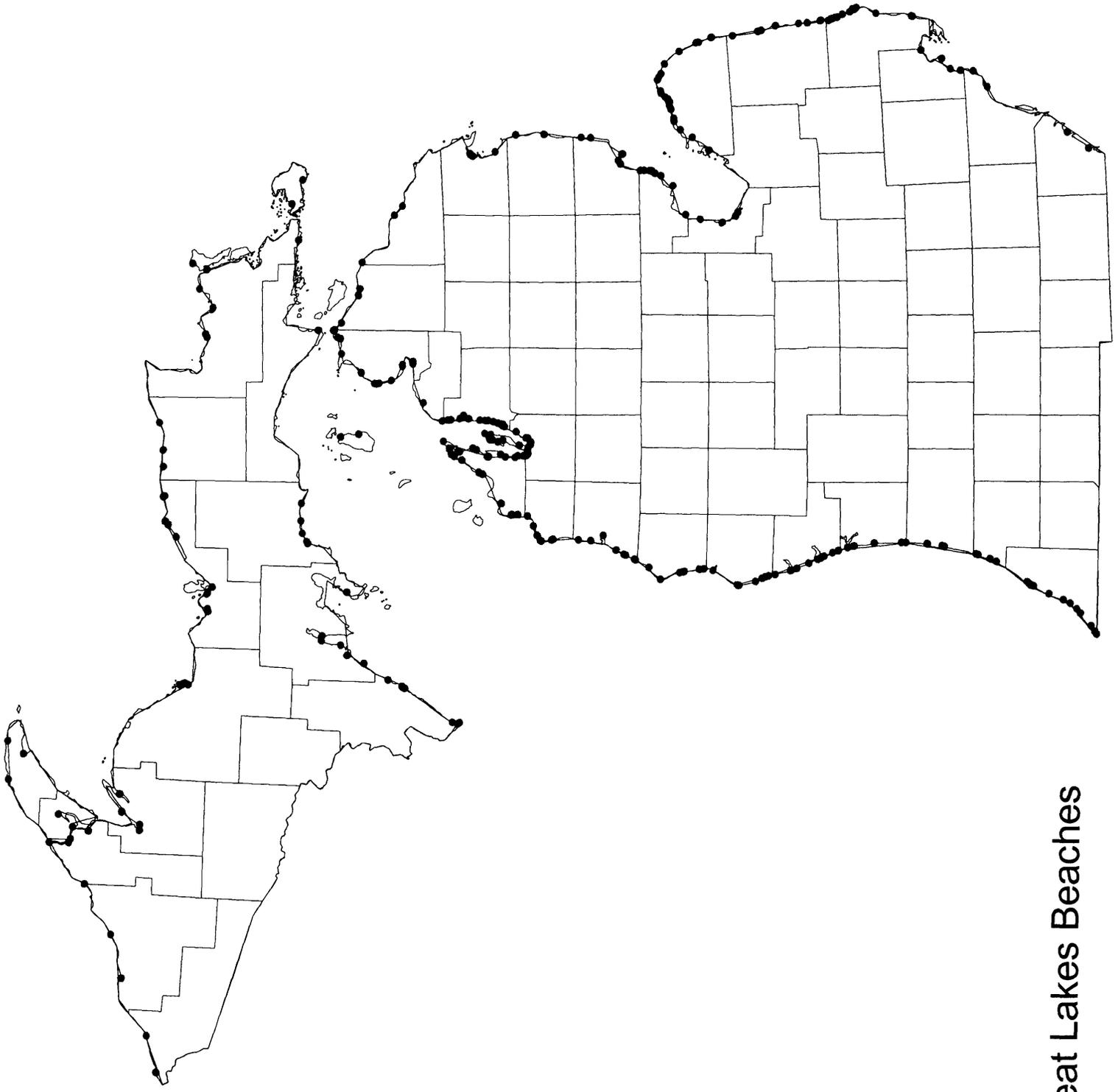


Figure 1. 2003 Great Lakes Beaches

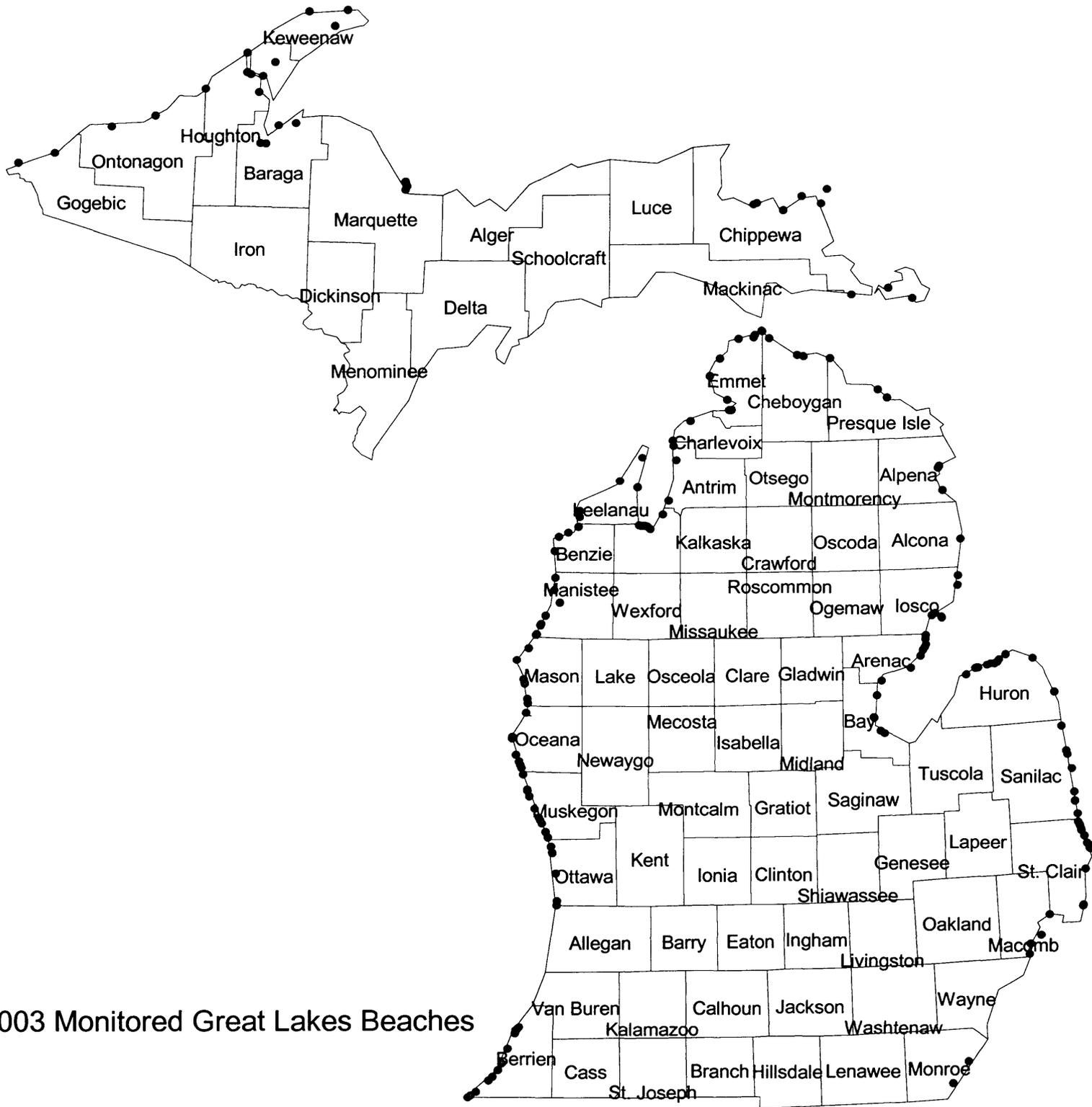


Figure 2. 2003 Monitored Great Lakes Beaches

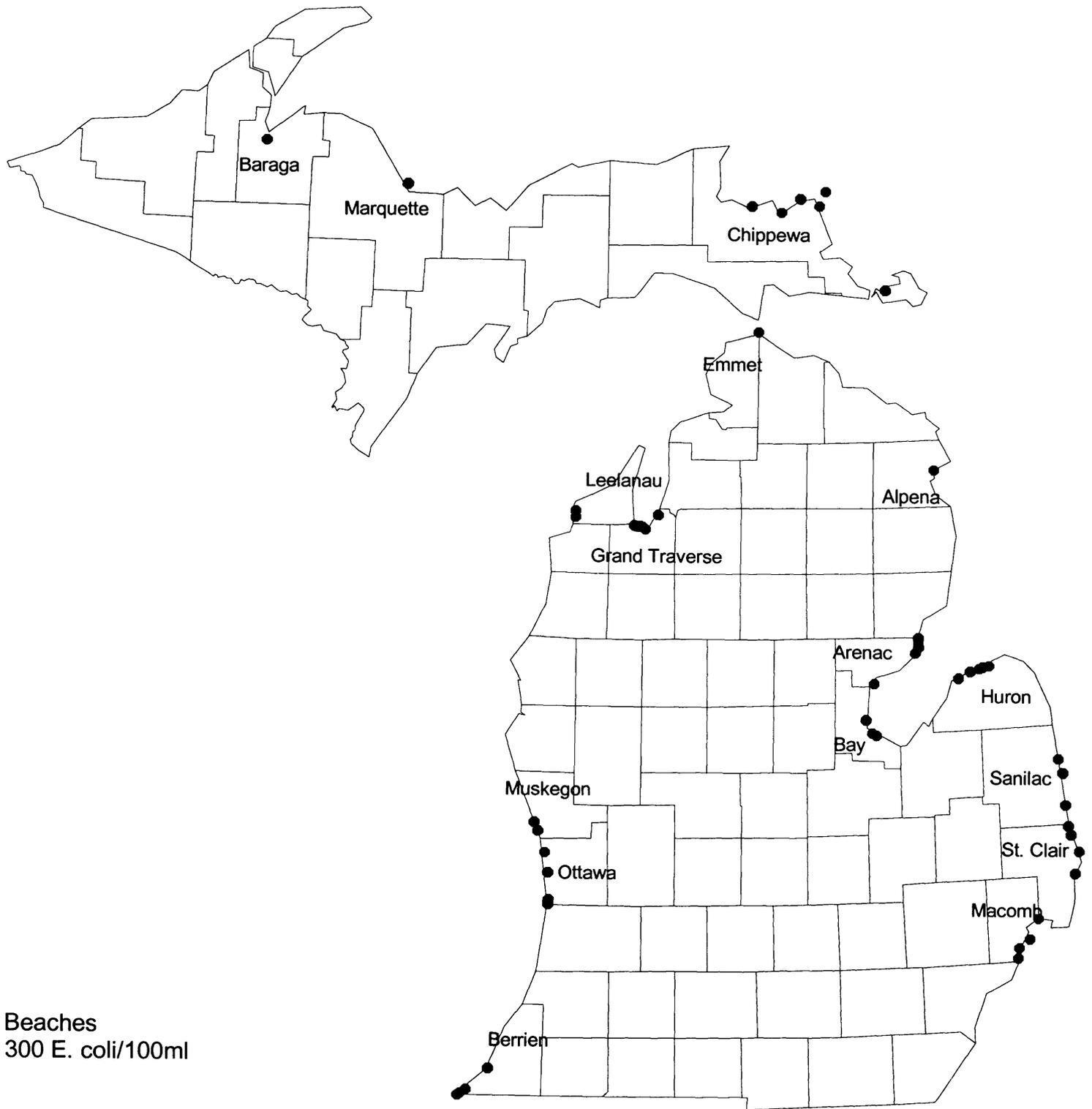


Figure 3. 2003 Great Lakes Beaches with daily means exceeding 300 E. coli/100ml