MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
WATER RESOURCES DIVISION
FEBRUARY 2018

STAFF REPORT

MICHIGAN BEACH MONITORING YEAR 2017 ANNUAL REPORT

INTRODUCTION

The Michigan Department of Environmental Quality (MDEQ) 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) (MDEQ, 1997). 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. Create and maintain a statewide database.
3. Determine whether waters of the state are safe for total body contact recreation.
4. Compile data to determine overall water quality.
5. Evaluate the effectiveness of MDEQ programs in attaining Water Quality Standards (WQS) for pathogen indicators.

1. ASSIST LOCAL HEALTH DEPARTMENTS TO IMPLEMENT AND STRENGTHEN BEACH MONITORING PROGRAMS

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 (Act 368), as amended. According to R 333.12541 of Act 368, a local health officer or an authorized representative of a local health department that conducts tests at bathing beaches is required to notify the MDEQ and other entities of the test results within 36 hours of conducting a test or evaluation. This rule also states that the local health department may petition the circuit court for an injunction ordering the owners of a beach to close the beach. Owners of public bathing beaches must post a sign that states whether or not the bathing beach has been tested, and if so, where the test results may be accessed.

The MDEQ awards grants to local health departments to monitor and report levels of *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.
- Proximity of beach to a known bacterial contamination source.
- Innovativeness and feasibility of proposed project.
- Ability to reduce time delay between sampling and results.

Funding for Beach Monitoring

Prior to 2000, health departments relied on local funding to conduct beach monitoring programs. Local funding was not sufficient to execute a comprehensive statewide monitoring program. Beginning in 2000, funding became available from the Clean Michigan Initiative-Clean Water Fund (CMI-CWF). In 2003, the United States Environmental Protection Agency (USEPA) began awarding funds from the Beaches Environmental Assessment and Coastal Health Act (BEACH Act) for monitoring Great Lakes beaches.

CMI-CWF Grants

The CMI-CWF offered reliable funding for the monitoring of surface water. Since 2000, the MDEQ distributed $2,062,204 CMI-CWF funds to support the development and implementation of inland lake beach monitoring programs throughout the state. This amount includes 15 awards totaling $200,000 (Appendix A) for monitoring beaches in 2017 and 2018.

The CMI-CWF grant funds are awarded to local health departments and nonprofit entities, which include county, city, township, and village agencies, watershed and environmental action councils, universities, regional planning agencies, and incorporated nonprofit 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.

BEACH Act Grants

The MDEQ distributes BEACH Act funds to aid in the development and implementation of Great Lakes beach monitoring programs. State, local, and tribal governments having coastal waters are eligible to apply for the BEACH Act grants. The USEPA (2014) revised the performance criteria that must be met by grant recipients. Since the BEACH Act was initiated in 2003, the MDEQ has allocated $3,464,548 including 24 awards in 2017 totaling $173,054 for beach monitoring using the culture-based and/or qPCR method (Appendix B).

Real Time Beach Monitoring Funds

Michigan is the first state to monitor beaches statewide using a new, rapid testing method for water quality to quickly address potential public health concerns and keep people safe. The new qPCR method quickly identifies and measures *E. coli* DNA in a beach water sample. The method provides results on the same day that a sample is collected. To implement the qPCR method, local health departments received $500,000 worth of equipment and grants in 2015 from the MDEQ. In 2016, 12 labs in Michigan successfully completed a validation study confirming their ability to perform the qPCR method for *E. coli*. In 2016 and 2017, labs began analyzing beach water samples with the qPCR method and comparing results to traditional culture-based methods. In 2017, The MDEQ provided $226,252 to support these labs as they analyze and compare qPCR results to culture based methods. In addition, Dr. Joan Rose from Michigan State University received $40,413 in 2017 from the MDEQ to continue providing specialized training and technical assistance for the qPCR method and beach water testing.

2. CREATE AND MAINTAIN A STATEWIDE DATABASE

The MDEQ developed a centralized statewide database, BeachGuard, which includes beach locations and maps, beach monitoring *E. coli* test results, notification data, and routine sanitary survey data. These data are available electronically to the public via the MDEQ's Web site (https://www.egle.state.mi.us/beach/).

The Web site provides the following information about individual beaches:

- location information (county, water body, and coordinates for latitude and longitude)
- frequency of testing
- monitoring history
- beach closures
- monitoring efforts
- search tools
- options for data export
- information for beach monitoring procedures and methods
- additional links to beach monitoring resources
- contact information for federal, state, and local beach monitoring staff

3. 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 illness associated with swimming in contaminated water, although other illnesses can occur. The severity of the disease or illness depends on the amount of exposure and the type of pathogen (Appendix C) (USEPA, 2001). The USEPA (1986 and 2012) has determined that *E. coli* and *Enterococci* are appropriate indicators for the presence of waterborne pathogens in fresh water.

Routine Sanitary Surveys

As part of the BEACH Act, local health departments conducted 1,204 routine sanitary surveys at 140 Great Lakes beaches and access points to identify sources of pollution that adversely impact beach water quality. Corrective actions have been taken as sources of pollution have been identified. In addition, local health departments conducted 1,352 routine sanitary surveys at 168 inland locations to identify sources of pollution that adversely impact beach water quality at inland lakes. Data for routine sanitary surveys for all of these beaches and locations are available on BeachGuard.

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 wastewater is larger than the WWTP can process, the excess untreated sewage and storm water are discharged into local waterways.

Sanitary Sewer Overflows are discharges of raw or inadequately treated sewage (MDEQ, 2016) 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 contamination. Urban storm water runoff from roads, roofs, construction sites, parking lots, etc., may contain fecal matter from pets and wildlife. Excessive waterfowl near the beaches and animal waste runoff from farms and fields 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 WQS

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

> 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 rules, as follows:

> R 323.1100 Designated Uses
> Rule 100(2): All surface waters of the state are designated and 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, CSOs, and areas influenced by certain agricultural practices is contrary to prudent public health and safety practices, even though WQS may be met.

The BEACH Act funds require that beach monitoring programs are consistent with the USEPA's grant criteria that cite the 2012 Recreation Criteria.

Beach Notification

The public will be warned of unsafe water conditions by beach notifications such as advisories or closures (collectively referred to as an action). These actions are based on beach data, which can show risks due to riptides, spills, harmful algal blooms, an *E. coli* result exceeding the WQS, or other potential threats to public health. Advisories or closures 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 30-day geometric mean to determine if a beach closure or 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.

The MDEQ developed a centralized statewide database, BeachGuard, which includes bathing beach monitoring *E. coli* test results and notification data. These data are available electronically to the public via BeachGuard (https://www.egle.state.mi.us/beach/).

Reporting Beach Monitoring and Notification Data

According to R 333.12541(2), 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, while non-grant receiving health departments are encouraged to report their data on the Web site.

As a requirement of the BEACH Act, the MDEQ submits beach monitoring data to the USEPA. The USEPA has created several Web pages for beach information that can be found at https://www.epa.gov/beaches, along with an online directory of information regarding the water quality at our nation's beaches entitled, "Beach Advisory Closing On-line Notification," that can be found at https://beacon.epa.gov/ords/beacon2/r/beacon_apex/beacon2/map-page.

4. COMPILE DATA TO DETERMINE OVERALL WATER QUALITY

List of Beaches

Michigan beaches identified by local health departments and the MDEQ are listed in Appendices D.1 (Inland Lakes-monitored), D.2 (Inland Lakes-not monitored), E.1 (Great Lakes-monitored), and E.2 (Great Lakes-not monitored). They are also listed on the MDEQ's beach Web site. The beaches are arranged alphabetically by county, then water body, then location (site name). There are 572 identified public beaches on inland lakes and rivers and 607 identified public beaches on the Great Lakes.

Synopsis of Data

Monitoring and notification data reported for beaches included results of *E. coli* tests, number of advisories or closures (actions) posted, and the number of days for each posting. In 2017, monitoring was conducted at 377 public beaches in 55 counties. Local beach managers collected 4,231 daily water samples and 134 (3.2 percent) exceeded Michigan's WQS (Appendices F.1 and F.2). A numerical summary of all monitored public beaches and samples exceeding WQS is found below in Table 1. The percent of samples exceeding WQS in 2017 are similar to the previous years.

Table 1. Number and percent of monitored public beaches and water samples in Michigan exceeding the daily geometric mean of 300 *E. coli* per 100 ml.

Year	2012	2013	2014	2015	2016	2017	10-Year Average
Number of Beaches with Exceedances	114	98	76	98	80	73	92.9
Percent of Beaches with Exceedances	27	24	23	25	19	19	22.7
Number of Samples Exceeding WQS	224	162	129	212	188	134	189
Percent of Samples Exceeding WQS	4	3	4	5	4	3	3.8

Notification data in 2017 for beach actions are shown in Table 2. A total of 308 of the 377 public beaches (82 percent) that were monitored were open during the entire swimming season. The number of beaches reporting an action was 69 (18 percent). The number of beaches with exceedances differed from the number of beaches with actions due to any of the following reasons: (1) water samples were tested before or after the swimming season; (2) delays in receiving test results; (3) a second test (follow-up sample) was used to confirm an exceedance; (4) preemptive closures or advisories were issued; or (5) contamination advisories were issued for potential chemical or oil discharge.

Table 2. Summary of monitored beaches with and without actions.

Year	2012	2013	2014	2015	2016	2017	10-Year Average
Total Actions For All Beaches	166	112	112	147	122	103	131.2
Total of Monitored Beaches with an Action	112	84	74	96	77	69	87.7
Percent of Monitored Beaches with an Action	26	20	22	25	18	18	21.5
Total of Monitored Beaches with no Action	311	329	260	291	340	308	320
Percent of Monitored Beaches with no Action	74	80	78	75	82	82	78.5

Synopsis of Data from Great Lakes Beaches

In 2017, 2,295 daily samples were collected at 185 Great Lakes public beaches in 35 counties in Michigan. A summary of WQS exceedances and closures/advisories for Great Lakes beaches is provided in Table 3. Exceedances and actions for Great Lakes beaches were of short duration. The number of monitored Great Lakes beaches is similar to previous years while the number of beaches with an action is the same as last year (Table 4).

Table 3. Number of exceedances and actions for Great Lakes beaches monitored in 2017.

a. Number of exceedances Reported per Beach	b. Number of Beaches with Exceedances	**Total Number of Exceedances (a*b)**	c. Number of Closures or Advisories per Beach	d. Number of Beaches with Closures or Advisories	**Total Number of Closures or Advisories (c*d)**
1	25	**25**	1	28	**28**
2	9	**18**	2	9	**18**
3	4	**12**	3	4	**12**
5	2	**10**	4	2	**8**
6	2	**12**			
8	1	**8**			
Total	43	**85**	**Total**	43	**66**

Table 4. Number of monitored Great Lakes beaches with and without an action.

Year	2012	2013	2014	2015	2016	2017	10-Year Average
GL Monitored Beaches with an Action	89	54	50	65	43	43	56.0
GL Monitored Beaches with no Action	171	185	110	138	166	142	161.5
Total GL Monitored Beaches	260	239	160	203	209	185	217.5

A summary of the 2017 beach action data for each of the Great Lakes, Lake St. Clair, and connecting channels is provided in Table 5. A summary of sources of contamination reported for actions in the Great Lakes, Lake St. Clair, and connecting channels is provided in Table 6.

Table 5. Data summary for the Great Lakes, Lake St. Clair, and connecting channels.

Summary	Lake Erie	Lake Huron	Lake Michigan	Lake Superior	Lake St. Clair	Great Lakes Connecting Channels	Total
Number of Public Beaches	2	174	293	120	4	14	**607**
Number of Monitored Beaches	2	52	103	19	4	5	**185**
Number of Beaches with exceedance	1	19	17	2	3	1	**43**
Number of exceedances	1	35	30	3	14	2	**85**
Number of Beaches with Actions	1	18	16	2	3	3	**43**
Number of Actions	1	27	23	2	9	4	**66**
Total Number of Days with Actions	7	93	63	9	94	21	**287**

Table 6. Contamination sources reported for advisories and closures, days affected, and the number of beaches for the Great Lakes, Lake St. Clair, and connecting channels for the specific cause of the beach action.

Contamination Source	Number of Actions with reporting Source	Number of Days Affected by Source	Number of Beaches Reporting Source
Storm Water	10	46	8
Sanitary Sewer Overflow	1	4	1
Wildlife	1	1	1
Other	1	8	1
Unknown	53	228	34
Total	**66**	**287**	**45***

*Multiple sources reported for some beaches.

Synopsis of Data from Inland Beaches

In 2017, 1,936 daily samples were collected at 192 inland lake public beaches in 39 counties in Michigan. Of the 26 beaches that reported actions, 5 beaches contributed 63 percent of the total days impacted by an action. The remaining 21 beaches issued an action lasting 1 to 14 days and contributed 37 percent of the total days impacted by an action.

A summary of WQS exceedances and closures/advisories for inland beaches is provided in Table 7. As seen with Great Lakes Beaches, exceedances and actions for inland beaches were of short duration. The number of monitored inland beaches varies by year and Table 8 shows the number of beaches with an action was about the same in 2017 as compared to previous years. A summary of sources of contamination reported for beach actions for inland lakes is provided in Table 9.

Table 7. Number of exceedances and actions for inland beaches monitored in 2017.

a. Number of exceedances Reported per beach	b. Number of Beaches with Exceedances	**Total Number of exceedances(a*b)**	c. number of actions per beach	d. number of beaches with actions	**Total Number of Actions (c*d)**
1	17	**17**	1	18	**18**
2	10	**20**	2	6	**12**
3	2	**6**	3	1	**3**
6	1	**6**	4	1	**4**
Total	**30**	**49**	**Total**	**26**	**37**

Table 8. Number of monitored inland lake beaches with and without an action.

Year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**10-Year Average**
Inland Lake Monitored Beaches with an Action	22	28	24	31	34	26	31.8
Inland Lake Monitored Beaches with no Action	137	146	150	153	174	166	158.4
Total Inland Lake Monitored Beaches	163	174	174	184	208	192	190.2

Table 9. Contamination sources reported for actions, days affected, and the number of beaches reporting the specific cause of an action for inland lakes.

Contamination Source	Number of Actions with reporting Source	Number of Days Affected by Source	Number of Beaches Reporting Source
Storm Water	2	2	1
Runoff	3	4	3
Wildlife	7	48	5
Other Reason	1	1	1
Unknown	24	193	18
Total	**37**	**248**	**28***

*Multiple sources reported for some beaches.

Synopsis of Rapid Testing at Sleeping Bear Dunes National Lakeshore

The National Park Service (NPS) monitored 11 beaches (Appendix G1) in 2 counties in the Sleeping Bear Dunes National Lakeshore using a qPCR method for enterococci developed by the USEPA. The rapid method was developed and used by the USEPA in epidemiological studies to derive a geometric mean and statistical threshold value for two risk levels. The USEPA also suggested the use of a beach action value (BAV) as a conservative, precautionary tool that may be used without adopting it into a WQS (USEPA, 2012). The NPS posted an advisory when results from the qPCR method exceeded the BAV of 1,000 calibrator cell equivalent (cce) of enterococci per 100 ml.

In 2017, the NPS collected 160 daily water samples and 19 (12%) exceeded the BAV (Table 10). Five beaches reported samples exceeding the BAV (Appendix G2), which resulted in 11 advisories. The total number of days with an advisory ranged from 3 days for two beaches to 31 days for one beach (Table 11).

Table 10. Number and percent of monitored public beaches and water samples at Sleeping Bear Dunes exceeding the BAV of 1,000 cce of Enterococci per 100 ml.

Sleeping Bear Dunes National Lakeshore Beaches	Lake Michigan Beaches	Inland Beaches	All Beaches
Number of Beaches Monitored	6	5	11
Number of Beaches Exceeding BAV	1	4	5
Percent of Beaches Exceeding BAV	17%	80%	46%
Number of Samples Collected	82	78	160
Number of Samples Exceeding BAV	1	18	19
Percent of Samples Exceeding BAV	1%	23%	12%

Table 11. Number of exceedances, advisories, and total days posted with advisory for beaches that exceeded BAV of 1,000 cce of Enterococci per 100 ml.

Name of Beach	Exceedances	Advisories	Total Days Posted with Advisory
Platte Point Bay	1	1	3
Platte River Outlet	1	1	3
Shalda Creek	4	3	8
Otter Creek	5	3	12
Good Harbor Creek Outlet	8	3	31

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

Beach Water Quality Data that do not meet WQS

Water quality protection continues to be a great concern in Michigan and depends on the collective efforts of multiple pollution prevention programs. As part of the beach monitoring program, health departments and the MDEQ routinely review beach water quality data. This information is used in federal, state, and local pollution prevention programs to determine which water bodies are not meeting WQS and to help identify sources of pollution that affect beach water quality.

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 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.

Waters associated with public beaches are considered to not be attaining WQS when *E. coli* monitoring data collected by county health departments during the total body contact recreation season of May 1 to October 31 (as described by R 323.1100(2)) meet one or more of the following decision elements:

- Ten percent of the monthly geometric mean samples exceed the monthly geometric mean WQS of 130 *E. coli* per 100 ml based on weekly samples collected over a minimum of 5 weeks.
- Ten percent of the daily geometric mean samples exceed the daily maximum WQS of 300 *E. coli* per 100 ml based on weekly samples collected over a minimum of 5 weeks.
- Two or more sample results collected at any time during the total body contact recreation season of May 1 to October 31 exceed 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. The beaches that exceed WQS per the decision elements are listed on the Section 303(d) list, which is available in the most recent "Water Quality and Pollution Control in Michigan Sections 303(d), 305(b), and 314 Integrated Report."

Report by: Brandon Armstrong, Ph.D.
Alex Strohm
Shannon Briggs, Ph.D.
Surface Water Assessment Section
Water Resources Division

REFERENCES

MDEQ. 1997. A Strategic Environmental Quality Monitoring Program for Michigan's Surface Waters. Michigan Department of Environmental Quality. Staff Report #MI/DEQ/SWQ-96/152. January 1997.

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

USEPA. 2001. Protocol for Developing Pathogen TMDLs. January 2001. EPA 84/R-00-002.

USEPA. 2012. Recreational Water Quality Criteria. EPA-820-F-12-058

USEPA. 2014. National Beach Guidance and Required Performance Criteria for Grants. EPA-823-B-14-001.

MDEQ. 2016. Sanitary Sewer Discharge Information.

2017-2018 CMI-CWF Grantees	Granted Amount	Total Monitored Beaches
Barry-Eaton District Health Department	$8,200.00	4
Central Michigan District Health Department	$28,736.00	14
District Health No. 2	$26,200.00	16
District Health Department No. 4	$5,200.00	2
District Health Department No. 10	$3,750.00	6
Health Department of Northwest Michigan	$19,267.00	19
Lake Superior State University	$7,883.00	3
Luce-Mackinac-Alger-Schoolcraft District Health Department	$5,200.00	2
Macomb County Health Department	$5,200.00	2
Oakland County Health Divison	$25,528.00	75
Public Health Muskegon County	$18,536.00	15
Watershed Center Grand Traverse Bay	$15,700.00	9
Wayne County Department of Health, Veterans and Community	$8,200.00	4
Western UP District Health Department	$11,200.00	6
Wexford County Drain Commision	$11,200.00	6
TOTAL	**$200,000.00**	**183**

Appendix B. 2017 BEACH Act Grants for Great Lakes Beaches.

Local Health Department	Allocated Amount
Allegan County Health Department	$5,000
Bay County Health Department	$5,000
Berrien County Health Department	$9,323
Central Michigan District Health Department	$8,706
Chippewa County Health Department	$6,853
Delta-Menominee District Health Department	$5,000
Detroit Belle Isle (DNR)	$2,500
District Health Department #2	$10,558
District Health Department #4	$8,706
District Health Department #10	$11,485
Huron County Health Department	$9,014
Luce-Mackinac-Alger-Schoolcraft District Health Department	$5,000
Macomb	$5,000
Marquette (City of Marquette)	$5,000
Monroe County Health Department	$5,000
Muskegon County Health Department	$9,014
Northwest Michigan Community Health Agency	$14,573
Ottawa County Health Department	$7,779
St. Clair County Health Department	$9,632
Sanilac County Health Department	$5,000
Van Buren/Cass District Health Department	$5,000
Watershed Center (Grand Traverse and Benzie-Leelanau)	$9,014
Wayne County Health Department	$2,500
Western Upper Peninsula District Health Department	$8,397
TOTAL	$173,054

Appendix C. 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 enterolitica	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

Source: USEPA, 2001

Appendix D.1. Inland Beaches Monitored 2017.

County #	Total Beach #	County	County Beach #	Water Body	Beach Location
1	1	**Alcona**	1	Alcona Pond	Alcona Park East Campground
	2	Alcona	2	Brownlee Lake	Village of Lincoln Park
	3	Alcona	3	Cedar Lake	Greenbush Township beach
	4	Alcona	4	Hubbard Lake	Caledonia Township Park
2	5	**Alpena**	1	Long Lake	Long Lake Park
3	6	**Antrim**	1	Central Lake	Thurston Park
	7	Antrim	2	Elsworth Lake	Wooden Shoe Park
	8	Antrim	3	Lake Bellaire	Richardi Park
	9	Antrim	4	Torch Lake	Day Park
	10	Antrim	5	Torch Lake	Eastport
4	11	**Arenac**	1	Oasis Lake	Oasis Lake County Park
5	12	**Barry**	1	Gun Lake	Main Beach - Day Use Area
	13	Barry	2	Gun Lake	Yankee Springs Recreation Area Campground Beach
	14	Barry	3	Thornapple Lake	Charlton Park
6	15	**Bay**	1	Kawkawlin River	Boat Launch on Kawkawlin River
	16	Bay	2	Saginaw River	Vet's Park North Bay City
7	17	**Benzie**	1	Crystal Lake	Bellows Beach
	18	Benzie	2	Crystal Lake	Beulah Beach
	19	Benzie	3	Lake Ann	Almira Township Park Beach
8	20	**Charlevoix**	1	Thumb Lake	Thumb Lake Beach
	21	Charlevoix	2	Walloon Lake	Melrose Township Park
9	22	**Chippewa**	1	Dukes Lake	Dukes Lake
	23	Chippewa	2	Kinross Lake	Kinross Lake
	24	Chippewa	3	Monocle Lake	Monocle Lake
10	25	**Clare**	1	Budd Lake	Wilson State Park
11	26	**Eaton**	1	Fox Memorial Park Beach	Fox Memorial Park
12	27	**Emmet**	1	Crooked Lake	Little Traverse Township Beach
	28	Emmet	2	Crooked Lake	Oden Beach
	29	Emmet	3	Larks Lake	Pioneer Picnic Park
	30	Emmet	4	Pickerel Lake	Camp Petosega
	31	Emmet	5	Pickerel Lake	Channel Beach
	32	Emmet	6	Walloon Lake	Resort Pike Road Beach
13	33	**Genesee**	1	Byram Lake	Clover Beach
	34	Genesee	2	Copneconic Lake	Camp Copneconic
	35	Genesee	3	Copneconic Lake	Copneconic Day Beach
	36	Genesee	4	Hasler Lake	Beach at Hasler Lake
	37	Genesee	5	Hasler Lake	Hasler Lake Campground
	38	Genesee	6	Holloway Reservoir	Buttercup Beach
	39	Genesee	7	Kelly Lake	Kelly Lake
	40	Genesee	8	Lake Callis	Lake Callis
	41	Genesee	9	Mott Lake	Bluebell Beach
	42	Genesee	10	Silver Lake	City Park Beach
14	43	**Gladwin**	1	Cedar River	Gladwin City Park
	44	Gladwin	2	Ross Lake	Beaverton City Park
15	45	**Gogebic**	1	Lake Gogebic	Gogebic County Park
	46	Gogebic	2	Lake Gogebic	Lake Gogebic State Park Beach
	47	Gogebic	3	Sunday Lake	Sunday Lake Beach
16	48	**Grand Traverse**	1	Duck Lake	Interlochen State Park Beach
	49	Grand Traverse	2	Long Lake (AKA: Mickey Lake)	Gilbert Beach
	50	Grand Traverse	3	Long Lake (AKA: Mickey Lake)	Taylor Park
	51	Grand Traverse	4	North Twin Lake	Twin Lakes Camp Beach
17	52	**Houghton**	1	Lake Roland	Twin Lakes State Park
18	53	**Ingham**	1	Hawk Island	Hawk Island County Park
19	54	**Iosco**	1	Foote Pond	Old Orchard Park
	55	Iosco	2	Long Lake	Long Lake Public Access
	56	Iosco	3	Sand Lake	Sand Lake - Sand Lake Road Access
	57	Iosco	4	Van Ettan Lake	Oscoda Township Park- Van Ettan Lake
20	58	**Isabella**	1	Borrow Pit	Herrick County Park
	59	Isabella	2	Chippewa River	Deerfield County Park

Appendix D.1. Inland Beaches Monitored 2017.

County #	Total Beach #	County	County Beach #	Water Body	Beach Location
	60	Isabella	3	Coldwater Lake	Coldwater Park
	61	Isabella	4	Halls Lake	Halls Lake
	62	Isabella	5	Littlefield Lake	Littlefield Lake
21	63	**Kalamazoo**	1	Blue Lake	Cold Brook County Park
	64	Kalamazoo	2	Campbell Lake	Robert Morris Park
	65	Kalamazoo	3	Eagle Lake	Fort Custer Recreation Area Beach
	66	Kalamazoo	4	Gull Lake	Ross Township Park
	67	Kalamazoo	5	Hogsett Lake	Prairie View County Park
	68	Kalamazoo	6	Long Lake	Ramona Park
	69	Kalamazoo	7	Sunset Lake	Sunset Lake Park
	70	Kalamazoo	8	Swimmers Lake	Markin Glen County Park
	71	Kalamazoo	9	Woods Lake	Woods Lake Beach
22	72	**Leelanau**	1	Lake Leelanau	Nedowâ€™s (Barthalomew) Beach
	73	Leelanau	2	South Bar Lake	South Bar Lake - South End
23	74	**Livingston**	1	Bishop Lake	Brighton State Recreation Area
	75	Livingston	2	Chenango Lake	Camp Talahi
	76	Livingston	3	Cook Lake	Taylor's Beach
	77	Livingston	4	Kent Lake	Island Lake Recreation Area - Kent Lake
	78	Livingston	5	Lake Walden	Waldenwoods Resort
	79	Livingston	6	Pleasant Lake	Howell Nature Center
	80	Livingston	7	Sandy Bottom Lake	Water's Edge Camp
	81	Livingston	8	Spring Mill Pond	Island Lake Recreation Area
	82	Livingston	9	Thompson Lake	Howell City Park
24	83	**Macomb**	1	Stony Creek Lake-Impoundment	Stony Creek Metropark-Baypoint Beach
	84	Macomb	2	Stony Creek Lake-Impoundment	Stony Creek Metropark-Eastwood Beach
25	85	**Marquette**	1	Dead River Reservoir	Marquette Tourist Park Beach
26	86	**Midland**	1	Kiwassee Lake	Stratford Woods Park Beach
	87	Midland	2	Sanford Lake	Sanford Lake Park
27	88	**Muskegon**	1	Bear Lake	Laketon Township Beach
	89	Muskegon	2	Big Blue Lake	Blue Lake County Park Beach
	90	Muskegon	3	Duck Lake	Duck Lake State Park Beach
	91	Muskegon	4	Fox Lake	Fox Lake Park Beach
	92	Muskegon	5	Half Moon Lake	Moore County Park Beach
	93	Muskegon	6	Mona Lake	Mona Lake Park Beach
	94	Muskegon	7	Mona Lake	Ross Park Beach
	95	Muskegon	8	Muskegon Lake	Harbor Towne Beach
	96	Muskegon	9	Muskegon Lake	Muskegon State Park - Muskegon Lake Side
	97	Muskegon	10	Muskegon Lake	Water Sports Park
	98	Muskegon	11	Twin Lake	Twin Lake County Park Beach
	99	Muskegon	12	West Lake	Paddley Park
	100	Muskegon	13	White Lake	Maple Park
	101	Muskegon	14	Wolf Lake	Sunset Park
	102	Muskegon	15	Wolf Lake	Wolf Lake County Park
28	103	**Oakland**	1	Adams Lake	Addison Oaks Co. Park
	104	Oakland	2	Big Seven Lake	Seven Lakes State Park
	105	Oakland	3	Bush Lake	Holly Village Beach
	106	Oakland	4	Carter Lake	Thelma Spencer Park
	107	Oakland	5	Cass Lake	Dodge Park #4
	108	Oakland	6	Cass Lake	Keego Harbor City Beach
	109	Oakland	7	Commerce Lake	Log Cabin Sub.
	110	Oakland	8	Crooked Lake	Independence Oaks County Park
	111	Oakland	9	Deer Lake	Independence Township Village Beach
	112	Oakland	10	Fish Lake	Camp Ohiyesa - North
	113	Oakland	11	Green Lake	Bay Court Park
	114	Oakland	12	Green Lake	Camp Wathana
	115	Oakland	13	Green Lake	Clearwater Campground
	116	Oakland	14	Handsome Lake	Crossroads For Youth
	117	Oakland	15	Heron Lake	Holly Recreation Area - Heron Beach
	118	Oakland	16	Kent Lake	Kensington - Maple beach

Appendix D.1. Inland Beaches Monitored 2017.

County #	Total Beach #	County	County Beach #	Water Body	Beach Location
	119	Oakland	17	Kent Lake	Kensington - Martindale Beach
	120	Oakland	18	Lake Four	Haas Lake Park #4
	121	Oakland	19	Lake One	Haas Lake Park #1
	122	Oakland	20	Lake Three	Haas Lake Park #3
	123	Oakland	21	Lake Two	Haas Lake Park #2
	124	Oakland	22	Long Lake	Christ the King Church Camp
	125	Oakland	23	Loon Lake	Birch Park
	126	Oakland	24	Loon Lake	Indianwood
	127	Oakland	25	Lower Trout	Bald Mountain Recreation Area
	128	Oakland	26	Mill Pond	Davisburg Village Beach (Hart Community Center)
	129	Oakland	27	Orchard Lake	Country Club (5000 W. Shore Dr)
	130	Oakland	28	Orion Lake	Greens Park Village Beach
	131	Oakland	29	Phillips Lake	Camp Dearborn - Lake #1
	132	Oakland	30	Phillips Lake	Camp Dearborn - Lake #5
	133	Oakland	31	Phillips Lake	Camp Maas - Rodecker
	134	Oakland	32	Phillips Lake	Camp Maas- Sobell Beach
	135	Oakland	33	Pontiac Lake	Pontiac Recreation Area
	136	Oakland	34	Prince Lake	Upland Hills Farm
	137	Oakland	35	Proud Lake	Proud Lake Recreation Area Campground
	138	Oakland	36	Round Lake	Scripter Village Park Township Beach
	139	Oakland	37	Sand Lake	Seven Lakes State Park - Campground
	140	Oakland	38	Scotch Lake	Scotch Lake Residents
	141	Oakland	39	Stewart Lake	Groveland Oaks County Park - Paradise Beach
	142	Oakland	40	Stony Lake	Stony Lake Park
	143	Oakland	41	Sun Lake	Finnish Day Camp
	144	Oakland	42	Sylvan Lake	Ferndale
	145	Oakland	43	Teeple Lake	Teeple Lake Recreation Area - Highland State Park
	146	Oakland	44	Tipsico Lake	Brown's Landing Mobile Home Park
	147	Oakland	45	Tommys Lake	Camp Agawam Boy Scout Camp
	148	Oakland	46	Walled Lake	E.V. Mercer City Beach
	149	Oakland	47	Walled Lake	Lakeshore Park
	150	Oakland	48	Walnut Lake	Bloomfield Parks & Recreation/West Hills M.S.
	151	Oakland	49	Woodhull Lake	Woodhull Lake Civic Association
29	152	**Ogemaw**	1	Devoe Lake	Rifle River Recreation Area
	153	Ogemaw	2	Elbow Lake	Mills Township Park
	154	Ogemaw	3	Grousehaven Lake	Rifle River Recreation Area Campground Beach
	155	Ogemaw	4	Hardwood Lake	Hardwood Lake
	156	Ogemaw	5	Rifle Lake	Shady Shores Park Subdivision Beach
	157	Ogemaw	6	Skidway Lake	Skidway Lake
30	158	**Ontonagon**	1	Lake Gogebic	Bergland Township Park
	159	Ontonagon	2	Lake Gogebic	Ontonagon County Park
31	160	**Osceola**	1	Big Lake	Crittenden Park
	161	Osceola	2	Muskegon River	Crawford Park
	162	Osceola	3	Rose Lake	Rose Lake County Park
32	163	**Oscoda**	1	Perry Lake	Comins Township. Park
	164	Oscoda	2	Smith Lake	Oscoda County Park
33	165	**Otsego**	1	Bear Lake	Bear Lake State Forest Campground
	166	Otsego	2	Big lake	Big Lake
	167	Otsego	3	Otsego Lake	Arbutus Beach
	168	Otsego	4	Otsego Lake	Otsego County Park
	169	Otsego	5	Otsego Lake	Otsego State Park
	170	Otsego	6	Otsego Lake	WahWahSoo Beach
34	171	**Presque Isle**	1	Sunken Lake	Sunken Lake County Park
35	172	**Roscommon**	1	Higgins Lake	North Higgins State Park
	173	Roscommon	2	Higgins Lake	South Higgins Lake State Park
	174	Roscommon	3	Houghton Lake	Denton Township Public Beach
	175	Roscommon	4	Houghton Lake	Houghton Lake Heights
	176	Roscommon	5	Lake St. Helen	Richfield Township Public Fishing Site
36	177	**Schoolcraft**	1	Indian Lake	Indian Lake State Park

Appendix D.1. Inland Beaches Monitored 2017.

County #	Total Beach #	County	County Beach #	Water Body	Beach Location
	178	Schoolcraft	2	Quarry Beach	Quarry Beach
37	179	**Washtenaw**	1	Bruin Lake	Pinckney Recreation Area
	180	Washtenaw	2	Half Moon Lake	Pinckney Recreation Area
	181	Washtenaw	3	Independence Lake	Independence Lake County Park
	182	Washtenaw	4	Silver Lake	Pinckney Recreation Area
	183	Washtenaw	5	Sugarloaf Lake	Waterloo Recreation Area
38	184	**Wayne**	1	Belleville Lake	Van Buren Township Park
	185	Wayne	2	Newburgh Lake	Newburgh and Sumac Pointes - Hines Park
	186	Wayne	3	Sherwood Lake	Sherwood Park
39	187	**Wexford**	1	Billings Lake	Manton Park
	188	Wexford	2	Lake Cadillac	Cadillac City Dock
	189	Wexford	3	Lake Cadillac	City Park
	190	Wexford	4	Lake Cadillac	Kenwood Park
	191	Wexford	5	Lake Meauwataka	Colfax Township Park
	192	Wexford	6	Lake Mitchell	Mitchell State Park

Appendix D.2. Inland Beaches Not Monitored 2017.

County #	Total Beach	County	County Beach	Water Body	Beach Location
1	1	**Alcona**	1	Alcona Pond	Alcona Pond West Campground
	2	Alcona	2	Hubbard Lake	Alcona Township Park
2	3	**Alger**	1	AuTrain Lake Campground	AuTrain Lake Campground USFS
	4	Alger	2	Corner Lake	Corner Lake Campground
	5	Alger	3	Dear Lake Park	Deer Lake Park
	6	Alger	4	Kingston Lake	Kingston Lake State Forest Campground
	7	Alger	5	Petes Lake	Petes Lake Campground
3	8	**Allegan**	1	Dumont Lake	Dumont Lake County Park Beach
	9	Allegan	2	Ely Lake	Ely Lake Campground Beach
	10	Allegan	3	Gun Lake	Gun Lake County Park Beach
	11	Allegan	4	Little John Lake	Little John Lake County Park Beach
	12	Allegan	5	Swan Creek Pond	Pine Point Campground Beach
4	13	**Alpena**	1	Beaver Lake	Beaver Lake Park
	14	Alpena	2	Lake Avalon	Lake Avalon Public Access
	15	Alpena	3	Long Lake	Long Lake Day Use
5	16	**Antrim**	1	Torch Lake	Torch River Bridge
	17	Antrim	2	Torch River	Torch River Sand Bar
6	18	**Arenac**	1	AuGres River	AuGres River - DNR Access @ pier
	19	Arenac	2	Man made Pond	Big Bend Campground
	20	Arenac	3	Man made Pond	Outdoor Adventures
	21	Arenac	4	Pine River	Pine River - Arenac County
7	22	**Barry**	1	Gull Lake	Prairieville Township Park
	23	Barry	2	Gun Lake	Old Beach - Day Use Area
8	24	**Bay**	1	Saginaw River	Independence Bridge
	25	Bay	2	Saginaw River	Vet's Park South River Rd.
9	26	**Benzie**	1	Crystal Lake	Bellows Beach (DEQ 2014)
	27	Benzie	2	Crystal Lake	Beulah beach (DEQ 2014)
	28	Benzie	3	Crystal Lake	South Shore near Beulah
	29	Benzie	4	Otter Creek Beach	Otter Creek Beach
	30	Benzie	5	Otter Creek Beach	Sleeping Bear Dunes-Otter Creek Beach
10	31	**Berrien**	1	Paw Paw Lake	Paw Paw Lake
	32	Berrien	2	St. Joseph River	Bertrand Park
	33	Berrien	3	St. Joseph River	Niles - French Paper
	34	Berrien	4	St. Joseph River	Niles - Marmont
11	35	**Branch**	1	First Lake	Quincy Park
	36	Branch	2	Messenger Lake	Memorial Park
12	37	**Calhoun**	1	Duck Lake	Springport
	38	Calhoun	2	Goguac Lake	Willard Beach in Battle Creek
13	39	**Charlevoix**	1	Huffman Lake	Hudson Township Park
	40	Charlevoix	2	Lake Charlevoix	Lower Lake Drive
14	41	**Cheboygan**	1	Black Lake	Black Lake S.F.C.G.
	42	Cheboygan	2	Black Lake	Bluffs Beach
	43	Cheboygan	3	Burt Lake	Burt Lake State Park
	44	Cheboygan	4	Burt Lake	Devoe Beach
	45	Cheboygan	5	Burt Lake	Hoppie's Launch
	46	Cheboygan	6	Burt Lake	Maple Bay Park
	47	Cheboygan	7	Douglass Lake	Ryder's Landing
	48	Cheboygan	8	Mullett Lake	Aloha State Park
	49	Cheboygan	9	Mullett Lake	Boy Scout Launch
	50	Cheboygan	10	Mullett Lake	Foot Road Park
	51	Cheboygan	11	Mullett Lake	Grand View Beach
	52	Cheboygan	12	Mullett Lake	Hobert's Launch
	53	Cheboygan	13	Mullett Lake	Orchard Beach
	54	Cheboygan	14	Mullett Lake	Polish Line Beach
	55	Cheboygan	15	Mullett Lake	Topinabee Park
	56	Cheboygan	16	Webber Lake	Webber Lake State Park

Appendix D.2. Inland Beaches Not Monitored 2017.

County #	Total Beach	County	County Beach	Water Body	Beach Location
15	57	**Chippewa**	1	Caribou Lake	Caribou Lake
	58	Chippewa	2	Carp Lake	Trout Lake
	59	Chippewa	3	Soldiers Lake	Soldiers Lake
16	60	**Clare**	1	Arnold Lake	Arnold Lake Beach
	61	Clare	2	Bertha Lake	Bertha Lake Beach
	62	Clare	3	Cranberry lake	Cranberry Lake South
	63	Clare	4	Crooked Lake	Crooked Lake/Camp Neyati Beach
	64	Clare	5	Crooked Lake	Hillcrest Public Landing
	65	Clare	6	Doc and Tom Lake	Lake of the Pines
	66	Clare	7	Dodge Lake	Dodge Lake Beach
	67	Clare	8	George Lake	Lake George Public Landing
	68	Clare	9	Grass Lake	Sandy Shores Beach
	69	Clare	10	Hayes Lake (Cranberry Lake)	Oak Hills Children's Camp
	70	Clare	11	Lilly Lake	Lilly Lake Beach
	71	Clare	12	Long Lake	Long Lake Beach
	72	Clare	13	Muskegon River	Muskegon River Township Park
	73	Clare	14	Sand Lake	Sand Lake Beach
	74	Clare	15	Shingle Lake	Shingle Lake Park
	75	Clare	16	Silver Lake	Silver Lake Park
	76	Clare	17	Townline Lake	Cedar Shores Beach
17	77	**Clinton**	1	Lake Ovid	Sleepy Hollow State Park Beach
18	78	**Eaton**	1	Grand River	Lincoln Brick Park
19	79	**Emmet**	1	Crooked Lake	Oden Beach
20	80	**Genesee**	1	Buell Lake	Boat Ramp at Buell Lake
	81	Genesee	2	Covenant Hill Camp	Covenant Hill Camp
	82	Genesee	3	Fenton Lake	DNR Boat Dock-Fenton Lake
	83	Genesee	4	Fenton Lake	Fenton Lake Marina
	84	Genesee	5	Fenton Lake	Township Hall
	85	Genesee	6	Flagstone Point	Flagstone Point Beach
	86	Genesee	7	Golden Rod Lake	Golden Rod Beach
	87	Genesee	8	Holloway Reservoir	Walleye Pike Dock
	88	Genesee	9	Kearsley Reservoir	Kearsley Reservoir Beach
	89	Genesee	10	Lake Helene	Lake Helene Beach
	90	Genesee	11	Lake Linda	Lake Linda
	91	Genesee	12	Lake Ponemah	DNR Boat Launch at Lake Ponemah
	92	Genesee	13	Lake Shinangaug	Lake Shinangaug
	93	Genesee	14	Linden Mill Pond	Linden Mill Pond Beach
	94	Genesee	15	Lobdell Lake	DNR Boat Launch at Lobdell Lake
	95	Genesee	16	McCaslin Lake	McCaslin Lake Beach
	96	Genesee	17	McKane Lake	McKane Lake Beach
	97	Genesee	18	Mott Lake	Bluegill Boat Ramp
	98	Genesee	19	Mott Lake	Mott Lake Beach
	99	Genesee	20	Mott Lake Stepping Stone	Mott Lake Stepping Stone Beach
	100	Genesee	21	Myers Lake	Myers Lake
	101	Genesee	22	Otter Lake	Griswold Park
	102	Genesee	23	Silver Lake	Silver Lake Marina
	103	Genesee	24	Smokerise Lake	Smokerise Beach
	104	Genesee	25	Thread Lake	Thread Lake Beach
	105	Genesee	26	West Sister Lake	West Sister Lake
21	106	**Gladwin**	1	Cedar River	Cedar River Campground Beach
	107	Gladwin	2	Cedar River	Gladwin North Park
	108	Gladwin	3	Flowing well/pond	Gilman Springs Swimming Area
	109	Gladwin	4	Hoister Lake	Hoister Lake Beach
	110	Gladwin	5	House Lake	House Lake
	111	Gladwin	6	Lake Four	Lake Four
	112	Gladwin	7	Lake Lancer	Sugar Springs/Lake Lancer

Appendix D.2. Inland Beaches Not Monitored 2017.

County #	Total Beach	County	County Beach	Water Body	Beach Location
	113	Gladwin	8	Lyle Drain/Tobacco River	Lost Haven Beach
	114	Gladwin	9	Pratt Lake	Pratt Lake
	115	Gladwin	10	Secord Lake	Secord Lake
	116	Gladwin	11	Secord Lake	Secord Lake - East
	117	Gladwin	12	Secord Lake	West River Drive Boat Launch
	118	Gladwin	13	Tittabawassee River	Estey Road Access
	119	Gladwin	14	Tittabawassee River	Gilman Springs Canoe Launch
	120	Gladwin	15	Tittabawassee River	Good News Camp
	121	Gladwin	16	Tittabawassee River	Pine Street Public Access
	122	Gladwin	17	Trout Lake	Trout Lake SFCG
	123	Gladwin	18	Wiggins Lake North	Wiggins Lake DNR Boat Launch
	124	Gladwin	19	Wiggins Lake South	Wiggins Lake - at Clendening Road
	125	Gladwin	20	Wixon Lake	Wixon Lake - West
22	126	**Hillsdale**	1	Baw Beese Lake	Sandy Beach
	127	Hillsdale	2	Bird lake	Bird Lake Beach
23	128	**Ingham**	1	Burchfield Pond	Burchfield Park
	129	Ingham	2	Lake Lansing	Lake Lansing Park South
	130	Ingham	3	Valhalla Pond	Valhalla Park
24	131	**Iosco**	1	Chain Lake	Chain Lake Beach
	132	Iosco	2	Foote Pond	Footsite Park
	133	Iosco	3	Loon Lake	Loon Lake Park
25	134	**Isabella**	1	Millpond	Millpond Park
26	135	**Jackson**	1	Clark Lake	Clark Lake County Park
	136	Jackson	2	Clear Lake	Clear Lake County Park
	137	Jackson	3	Gilletts Lake	Gilletts Lake County Park
	138	Jackson	4	Grass Lake	Grass Lake County Park
	139	Jackson	5	Lime Lake	Lime Lake County Park
	140	Jackson	6	Little Wolf Lake	Little Wolf Lake County Park
	141	Jackson	7	Pleasant Lake	Pleasant Lake County Park & Campground
	142	Jackson	8	Portage Lake	Portage Lake County Park
	143	Jackson	9	Round Lake	Round Lake County Park
	144	Jackson	10	Swains Lake	Swains Lake County Park
	145	Jackson	11	Vandercook Lake	Vandercook Lake County Park
	146	Jackson	12	Vineyard Lake	Vineyard Lake County Park
27	147	**Kalamazoo**	1	Timber Lake	Timber Lake Campground
28	148	**Kent**	1	Lincoln Lake	Lincoln Lake Baptist Camp
	149	Kent	2	Lincoln Lake	Lincoln Pines Resort
	150	Kent	3	Long Lake	Long Lake County Park
	151	Kent	4	Myers Lake	Myers Lake County Park
	152	Kent	5	Reeds Lake	Collins Park
	153	Kent	6	Scalley Lake	Scalley Lake Park
	154	Kent	7	Versluis Lake	Versluis Park
	155	Kent	8	Wabasis Lake	Wabasis Lake County Park
29	156	**Leelanau**	1	Lake Leelanau	Leelanau Township Park Beach
	157	Leelanau	2	Lake Leelanau	Popp Road End
30	158	**Livingston**	1	Bentley Lake	Camp Innisfree
	159	Livingston	2	Dibrova Lake	Green Valley Camp
	160	Livingston	3	Lake Chemung	Lake Chemung Outdoor Resort
	161	Livingston	4	Church Lake	Wildwood Ranch
31	162	**Luce**	1	Bass Lake	Bass Lake SFC
	163	Luce	2	Bodi Lake	Bodi Lake SFC
	164	Luce	3	Culhane Lake	Culhane Lake SFC
	165	Luce	4	HeadQuarters SFC	HeadQuarters SFC
	166	Luce	5	Holland Lake SFC	Holland Lake SFC
	167	Luce	6	Luce County Park	Luce County Park Campground
	168	Luce	7	Muskallonge Lake	Muskallonge Lake SFC

Appendix D.2. Inland Beaches Not Monitored 2017.

County #	Total Beach	County	County Beach	Water Body	Beach Location
	169	Luce	8	Perch Lake SFC	Perch Lake SFC
	170	Luce	9	Pike Lake	Pike Lake SFC
	171	Luce	10	Pretty Lake	Pretty Lake SFC
32	172	**Mackinac**	1	Brevort Lake	Brevort Lake Campground Beach
	173	Mackinac	2	Garnet Lake	Garnet Lake SFC
	174	Mackinac	3	Little Brevort Lake North	Little Brevort Lake State Campground North
	175	Mackinac	4	Little Brevort Lake South	Little Brevort Lake State Campground South
	176	Mackinac	5	Milakokia Lake	Milakokia Lake SFC
	177	Mackinac	6	Millecoquins Lake	Millecoquins Lake SFC
	178	Mackinac	7	South Manistique Lake	South Manistique Lake SFC
33	179	**Manistee**	1	Bear Lake	Bear Lake-13 Mile Road Beach
	180	Manistee	2	Bear Lake	Bear Lake-7th Street Beach
	181	Manistee	3	Bear Lake	Bear Lake-Hopkins Park
	182	Manistee	4	Bear Lake	Bear Lake-Myers Road Beach
	183	Manistee	5	Bear Lake	Bear Lake-Pleasanton Twn. Park Beach
	184	Manistee	6	Lake	Bear Lake-South Shore Beach
34	185	**Menominee**	1	Hermansville lake	Hermansville Beach
	186	Menominee	2	Shakey Lakes	Shakey Lakes Campground
35	187	**Monroe**	1	(man-made pond)	Totem Pole Campground Pond
	188	Monroe	2	Camp Lord Willing Pond	Camp Lord Willing
	189	Monroe	3	Covered Wagon Campground Pond	Covered Wagon Campground
	190	Monroe	4	Heath Beach Pond	Heath Beach
	191	Monroe	5	K.C. Campground Pond	K.C. Campground
	192	Monroe	6	Monroe KOA Campground Pond	Monroe K.O.A. Campground
	193	Monroe	7	Pirollis Campground Pond	Pirolli's Campground
	194	Monroe	8	The Vine campground pond	The Vine
	195	Monroe	9	Wilderness Retreat Campground Pon	Wilderness Retreat Campground
36	196	**Montmorency**	1	Clear Lake	Clear Lake Day Use
	197	Montmorency	2	Clear Lake	Clear Lake State Park
	198	Montmorency	3	Crooked Lake	Crooked Lake Beach
	199	Montmorency	4	East Twin Lake	East Twin Beach/Albert Township Park
	200	Montmorency	5	Ess Lake	Ess Lake State Campground
37	201	**Muskegon**	1	Goose Egg Lake	Kattulpa
38	202	**Oakland**	1	Bass Lake	Idlewild Subdivision
	203	Oakland	2	Bogie Lake	Bogie Lake Property Owners - Beryl Drive
	204	Oakland	3	Bogie Lake	Pinecrest Shores
	205	Oakland	4	Brendel Lake	Brendle Heights - Hillwood
	206	Oakland	5	Carpenter Lake	Lakeview Recreation
	207	Oakland	6	Carpenter Lake	Silver Valley Subdivision
	208	Oakland	7	Cass Lake	Cass Lake Woods
	209	Oakland	8	Cass Lake	Keego Harbor Trailer Park
	210	Oakland	9	Cass Lake	Sylvan-on-the-Lakes
	211	Oakland	10	Cass Lake	Willow Beach Subdivision
	212	Oakland	11	Cedar Island Lake	Cedar Crest Subdivision
	213	Oakland	12	Cedar Island Lake	Sunset Subdivision
	214	Oakland	13	Charnwood Lake	Charnwood
	215	Oakland	14	Clear Lake	Lakeland Improvement Association - Keith Street
	216	Oakland	15	Cranberry Lake	Cranberry Lake Village
	217	Oakland	16	Cranberry Lake	Cranberry Lake Village
	218	Oakland	17	Crescent Lake	Crescent Highlands
	219	Oakland	18	Crescent Lake	Crescent Lake Park
	220	Oakland	19	Davis Lake	Meagher Park/Woodland Manor
	221	Oakland	20	Deer Lake	Deer Lake Estates
	222	Oakland	21	Ekelund Lake	Camp Gordanwood
	223	Oakland	22	Elizabeth Lake	Cass-Elizabeth Heights
	224	Oakland	23	Elizabeth Lake	ECHPOA

County #	Total Beach	County	County Beach	Water Body	Beach Location
	225	Oakland	24	Elizabeth Lake	Elizabeth Lake Estates Improvement Assoc.
	226	Oakland	25	Elizabeth Lake	Elizabeth Lakeshore
	227	Oakland	26	Elizabeth Lake	Elizabeth Shores
	228	Oakland	27	Elizabeth Lake	Rangate Park
	229	Oakland	28	Elizabeth Lake	Terrace
	230	Oakland	29	Elizabeth Lake	Walters
	231	Oakland	30	Emerald Lake	Emerald Lake Homeowners Assoc. - Lyster Rd
	232	Oakland	31	Fox Lake	Cloister-on-the-Lakes
	233	Oakland	32	Geneva Lake	Lakewood Farms - Crocus Street
	234	Oakland	33	Geneva Lake	Lakewood Farms - Sharon Street
	235	Oakland	34	Green Lake	Green Acres / Green Valley Park
	236	Oakland	35	Hammond Lake	Hammond Estates
	237	Oakland	36	Harvey Lake	Harvey Lake Estates
	238	Oakland	37	Harvey Lake	Harvey Lake Heights
	239	Oakland	38	Huntoon Lake	Broadway Civic Association
	240	Oakland	39	Huntoon Lake	Burlingham Lake Park I
	241	Oakland	40	Huntoon Lake	Burlingham Lake Park II
	242	Oakland	41	Huntoon Lake	Huntoon Village
	243	Oakland	42	Indian Lake	Indian Lake Improvement Association
	244	Oakland	43	Lakeville Lake	Doll's Dock (Skip's Landing)
	245	Oakland	44	Long Lake	Annex 1
	246	Oakland	45	Long Lake	Bunny Run C.C.
	247	Oakland	46	Long Lake	Twin Shores Subdivision
	248	Oakland	47	Loon Lake	Sandy Beach
	249	Oakland	48	Lotus Lake	Harris Park
	250	Oakland	49	Lotus Lake	Lotus Park
	251	Oakland	50	Lotus Lake	Mountain View
	252	Oakland	51	Lower Straits	Maple Point
	253	Oakland	52	Lower Straits Lake	Lower Straits Beach Club
	254	Oakland	53	Maceday Lake	Mountain View C.C. Subdivision
	255	Oakland	54	Maceday Lake	Whitfield-Maceday Association - North
	256	Oakland	55	Maceday Lake	Whitfield-Maceday Association - South
	257	Oakland	56	Marion Lake	Locklin Pines Association
	258	Oakland	57	Meadow Lake	Meadow Lake Association
	259	Oakland	58	Middle Straits Lake	Crystal Echo
	260	Oakland	59	Middle Straits Lake	Crystal Echo (the point)
	261	Oakland	60	Middle Straits Lake	Stony Beach
	262	Oakland	61	Middle Straits Lake	Tripps Sub. Park
	263	Oakland	62	Middle Straits Lake	Twin Beach Park
	264	Oakland	63	Middle Straits Lake	West Acres
	265	Oakland	64	Morgan Lake	Lake Angelus Lakeview Estates
	266	Oakland	65	Mud Lake	Rose Hill Center
	267	Oakland	66	Narrin Lake	Camp Narrin
	268	Oakland	67	Neva Lake	Lakewood Village Subdivision
	269	Oakland	68	Oakland Lake	Bird Island Subdivision
	270	Oakland	69	Oakland Lake	Lake Oakland Heights
	271	Oakland	70	Oakland Lake	Lake Oakland Shores
	272	Oakland	71	Orion Lake	Lake Orion Heights
	273	Oakland	72	Orion Lake	Sunset Club
	274	Oakland	73	Pine Lake	Pine Lake Manor
	275	Oakland	74	Round Lake	Family Park
	276	Oakland	75	Rowe Lake	Jacksina Subdivision
	277	Oakland	76	Sherwood Lake	Ledgewood
	278	Oakland	77	Sherwood Lake	Sherwood Boat Ramp
	279	Oakland	78	Silver Lake	Silver Hill Road
	280	Oakland	79	Square Lake	Pleasant View Subdivision

Appendix D.2. Inland Beaches Not Monitored 2017.

County #	Total Beach	County	County Beach	Water Body	Beach Location
	281	Oakland	80	Square Lake	Pleasant View Subdivision - Kempster St
	282	Oakland	81	Sugden Lake	Oakridge Subdivision
	283	Oakland	82	Sylvan Lake	Cunningham Park
	284	Oakland	83	Sylvan Lake	Lakeview
	285	Oakland	84	Sylvan Lake	Pioneer Highlands
	286	Oakland	85	Sylvan Lake	Sylvan Shores Improvement Association
	287	Oakland	86	Tan Lake	Mary K. Subdivision
	288	Oakland	87	Union Lake	Alpha Beach
	289	Oakland	88	Union Lake	Burley & Barnsbury Streets
	290	Oakland	89	Union Lake	Union Lake Beach Club
	291	Oakland	90	Union Lake	Union Lake Heights Subdivision #2
	292	Oakland	91	Upper Pettibone Lake	657 Dunleavy
	293	Oakland	92	Upper Straits Lake	Banker's Subdivision
	294	Oakland	93	Upper Straits Lake	Bayside Beach Association
	295	Oakland	94	Upper Straits Lake	Outlet A
	296	Oakland	95	Upper Straits Lake	Shady Beach
	297	Oakland	96	Van Norman Lake	Waterford Hill
	298	Oakland	97	Voorheis Lake	Keatington Subdivision - Eaton Gate - off Baldwin
	299	Oakland	98	Voorheis Lake	Keatington Subdivision - Joslyn Ct.
	300	Oakland	99	Walled Lake	Beachwalk Apartments
	301	Oakland	100	Walnut Lake	Finnish American Club of Detroit
	302	Oakland	101	Walnut Lake	North Cove
	303	Oakland	102	Walnut Lake	Shenandoah Farms Association
	304	Oakland	103	Walnut Lake	Walnut Lake Park
	305	Oakland	104	Watkins Lake	Heitch Street
	306	Oakland	105	Watkins Lake	Lanarh Street
	307	Oakland	106	Watkins Lake	Whitney Street
	308	Oakland	107	Waumegah Lake	Lake Waumegah Homeowners Association
	309	Oakland	108	Whipple Lake	Whipple Shores Subdivision
	310	Oakland	109	White Lake	Rolling Acres
	311	Oakland	110	White Lake	Stanley Beach
	312	Oakland	111	Wildwood Lake	Holly Recreation Area - Wildwood Beach
	313	Oakland	112	Wing Lake	Wing Lake Farms Association
39	314	**Ogemaw**	1	Grousehaven Lake	Rifle River Recreation Area Day Use Area
	315	Ogemaw	2	Lake George	Lake George Campground
40	316	**Osceola**	1	Center Lake	Center Lake Bible Camp
	317	Osceola	2	Center Lake	Center Lake Park
	318	Osceola	3	Center Lake	Kettunen Center
	319	Osceola	4	Diamond Lake	Diamond Lake
	320	Osceola	5	Diamond Lake	DNR Access Diamond Lake
	321	Osceola	6	Hicks Lake	DNR Access Hicks Lake
	322	Osceola	7	McCoy Lake	DNR Access McCoy Lake
	323	Osceola	8	Muskegon River	City of Evart Campground
	324	Osceola	9	Muskegon River	Hersey Road Access
	325	Osceola	10	Rose Lake	Rose Lake Youth Camp
	326	Osceola	11	Sunrise Lake	Sunrise Lake Park
	327	Osceola	12	Todd Lake	DNR Access Todd Lake
	328	Osceola	13	Wells Lake	DNR Access Wells Lake
41	329	**Oscoda**	1	Mio Pond	Mio Pond Campground
42	330	**Otsego**	1	Dixon Lake	Dixon Lake Access
	331	Otsego	2	Otsego Lake	Otsego Lake State Park North
	332	Otsego	3	Pickeral Lake	Pickeral Lake State Forest Campground
43	333	**Ottawa**	1	Crockery Lake	Grose Park
	334	Ottawa	2	Georgetown Lake	Georgetown Community Park
	335	Ottawa	3	Lake Macatawa	Dunton Park
	336	Ottawa	4	Lake Macatawa	Fallen Leaf Park

Appendix D.2. Inland Beaches Not Monitored 2017.

County #	Total Beach	County	County Beach	Water Body	Beach Location
	337	Ottawa	5	Lake Macatawa	Holland State Park
	338	Ottawa	6	Maplewood Lake	Maplewood Lake Park
	339	Ottawa	7	Pottawattomie Bayou	Pottawattomie Park
	340	Ottawa	8	Spring Lake	Lakeside Beach
44	341	**Presque Isle**	1	Black Lake	Onaway State Park
	342	Presque Isle	2	Grand Lake	Grand Lake Northwest
	343	Presque Isle	3	Grand Lake	Grand Lake Public Access
	344	Presque Isle	4	Lake May	Lake May Public Access
	345	Presque Isle	5	Ocquoec River	Millersburg Park
	346	Presque Isle	6	Ocquoec River	Ocquoec Falls Park
	347	Presque Isle	7	Shoepac Lake	Shoepac Lake Camp Ground
	348	Presque Isle	8	Tomahawk Lake	Tomahawk Lake Camp Ground
45	349	**Roscommon**	1	Backus Pond	Backus Township. Park
	350	Roscommon	2	Bambi Lake/Sinkhole Lake	Bambi Lake Camp
	351	Roscommon	3	Higgins Lake	Beaver Creek Road End
	352	Roscommon	4	Higgins Lake	DNR Public Fishing Site
	353	Roscommon	5	Higgins Lake	Gerrish Township Park
	354	Roscommon	6	Higgins Lake	Higgins Lake Public Fishing Site
	355	Roscommon	7	Higgins Lake	Kelly Beach
	356	Roscommon	8	Higgins Lake	Phoenix Park
	357	Roscommon	9	Higgins Lake	Sam-O-Set Road End
	358	Roscommon	10	Houghton Lake	Houghton Lake DNR Boat Launch and Park
	359	Roscommon	11	Houghton Lake	Houghton Lake Public Fishing Site
	360	Roscommon	12	Houghton Lake	Houghton Lake State Forest Campground
	361	Roscommon	13	Houghton Lake	Old 27 DNR Access
	362	Roscommon	14	Owens Lake	Camp Co-Be-Ac
46	363	**Saginaw**	1	Haithco Lake	Haithco Recreation Area
	364	Saginaw	2	Lake of Dreams	Lake of Dreams Campground
47	365	**Schoolcraft**	1	Clear Lake	Clear Lake Camp
	366	Schoolcraft	2	Clear Lake	Cowell Lake Campground
	367	Schoolcraft	3	Gulliver Lake	Gulliver Lake
	368	Schoolcraft	4	Swan Lake	Swan lake
	369	Schoolcraft	5	Triangle Lake Site #1	Triangle Lake Site #1
	370	Schoolcraft	6	Triangle Lake Site #2	Triangle Lake Site #2
48	371	**St. Clair**	1	Emmett K.O.A. Pond	Emmett K.O.A.
	372	St. Clair	2	Fort Trodd Lake	Fort Trodd Campground North
	373	St. Clair	3	Fort Trodd Lake	Fort Trodd South
	374	St. Clair	4	Kimball Pond	Kimball Township Pond
	375	St. Clair	5	Ruby Campground Pond	Ruby Campground
49	376	**St. Joseph**	1	Cade Lake	Cade Lake Beach
	377	St. Joseph	2	Palmer Lake	Palmer Lake Beach
	378	St. Joseph	3	Sand Lake	Nottawa Park
50	379	**Tuscola**	1	Murphy Lake	Murphy Lake
51	380	**Wayne**	1	Newburgh Lake	Newburgh Lake

Appendix E.1. Great Lakes Beaches Monitored 2017.

County #	Total Beach #	County	County Beach #	Water Body	Beach Location
1	1	**Alcona**	1	Lake Huron	Greenbush Township
	2	Alcona	2	Lake Huron	Harrisville State Park
2	3	**Allegan**	1	Lake Michigan	Casco Township Park
	4	Allegan	2	Lake Michigan	Douglas Beach
	5	Allegan	3	Lake Michigan	Laketown Township Park
	6	Allegan	4	Lake Michigan	Oval Beach
	7	Allegan	5	Lake Michigan	Pier Cove Beach
	8	Allegan	6	Lake Michigan	Saugatuck Dunes State Park Shoreline Beach
	9	Allegan	7	Lake Michigan	West Side County Park Beach
3	10	**Alpena**	1	Lake Huron	Blair Street Park
	11	Alpena	2	Lake Huron	Starlite Beach
4	12	**Antrim**	1	Lake Michigan	Antrim County Day Park South
	13	Antrim	2	Lake Michigan	Banks Township. Park
	14	Antrim	3	Lake Michigan	Barnes Park
	15	Antrim	4	Lake Michigan	Elk Rapids
	16	Antrim	5	Lake Michigan	Veterans Memorial Park
5	17	**Arenac**	1	Lake Huron	Arenac County Park
	18	Arenac	2	Lake Huron	Bessinger Road Beach
	19	Arenac	3	Lake Huron	Cemetery Beach
	20	Arenac	4	Lake Huron	Dyer Road Beach
	21	Arenac	5	Lake Huron	Foster Road Beach
	22	Arenac	6	Lake Huron	Hammel Beach Road Access
	23	Arenac	7	Lake Huron	Singing Bridge Beach
	24	Arenac	8	Lake Huron	Twining Road Beach
	25	Arenac	9	Lake Huron	Whites Beach
6	26	**Bay**	1	Lake Huron	Bay City State Recreation Area
	27	Bay	2	Lake Huron	Brissette Beach Township Park
	28	Bay	3	Lake Huron	Pinconning Park
	29	Bay	4	Lake Huron	South Linwood Beach Township Park
	30	Bay	5	Lake Huron	Wenona Beach
7	31	**Baraga**	1	Lake Superior	L'Anse Waterfront Park
8	32	**Benzie**	1	Lake Michigan	Frankfort: Anchor Road Beach
9	33	**Berrien**	1	Lake Michigan	Cherry Beach
	34	Berrien	2	Lake Michigan	Grand Beach
	35	Berrien	3	Lake Michigan	Hagar Township Park
	36	Berrien	4	Lake Michigan	Jean Klock Park
	37	Berrien	5	Lake Michigan	Lincoln Township Park
	38	Berrien	6	Lake Michigan	Lions Park
	39	Berrien	7	Lake Michigan	Michiana Village
	40	Berrien	8	Lake Michigan	New Buffalo City
	41	Berrien	9	Lake Michigan	Rocky Gap
	42	Berrien	10	Lake Michigan	Silver Beach
	43	Berrien	11	Lake Michigan	Tiscornia Park
	44	Berrien	12	Lake Michigan	Union Pier - Townline Road
	45	Berrien	13	Lake Michigan	Warren Dunes Beach
	46	Berrien	14	Lake Michigan	Weko Beach
10	47	**Charlevoix**	1	Lake Michigan	Depot Beach
	48	Charlevoix	2	Lake Michigan	East Jordan Tourist Park
	49	Charlevoix	3	Lake Michigan	Elm Point Beach
	50	Charlevoix	4	Lake Michigan	Ferry Beach
	51	Charlevoix	5	Lake Michigan	Fisherman's Island State Park
	52	Charlevoix	6	Lake Michigan	Glenwood Beach
	53	Charlevoix	7	Lake Michigan	Hayes Township Park
	54	Charlevoix	8	Lake Michigan	Lake Michigan Beach
	55	Charlevoix	9	Lake Michigan	Michigan Avenue
	56	Charlevoix	10	Lake Michigan	Mt. McSauba Beach
	57	Charlevoix	11	Lake Michigan	Norwood Township Park
	58	Charlevoix	12	Lake Michigan	Washington Street Beach
	59	Charlevoix	13	Lake Michigan	Whiting Park Beach
	60	Charlevoix	14	Lake Michigan	Young State Park Beach

Appendix E.1. Great Lakes Beaches Monitored 2017.

County #	Total Beach #	County	County Beach #	Water Body	Beach Location
11	61	**Chippewa**	1	Connecting	Four Mile Beach
	62	Chippewa	2	Connecting	Sugar Island Township Park
	63	Chippewa	3	Lake Superior	Brimley State Park
	64	Chippewa	4	Lake Superior	Sherman Park
12	65	**Delta**	1	Lake Michigan	Escanaba Bathing Beach
	66	Delta	2	Lake Michigan	Gladstone Bathing Beach/Van Cleve Park
13	67	**Emmet**	1	Lake Michigan	Cross Village Beach
	68	Emmet	2	Lake Michigan	Mackinaw City Beach #1
	69	Emmet	3	Lake Michigan	Mackinaw City Beach #2
	70	Emmet	4	Lake Michigan	Magnus Park
	71	Emmet	5	Lake Michigan	Middle Village Park
	72	Emmet	6	Lake Michigan	Petoskey State Park
	73	Emmet	7	Lake Michigan	Readmond Township Beach
	74	Emmet	8	Lake Michigan	Sturgeon Bay Township Beach
	75	Emmet	9	Lake Michigan	Wilderness State Park
	76	Emmet	10	Lake Michigan	Zoll Street Beach
	77	Emmet	11	Lake Michigan	Zorn Park - Harbor Springs
14	78	**Grand Traverse**	1	Lake Michigan	Bayside Acme Township Park
	79	Grand Traverse	2	Lake Michigan	Bryant Park Beach
	80	Grand Traverse	3	Lake Michigan	Clinch Park
	81	Grand Traverse	4	Lake Michigan	Dock Road
	82	Grand Traverse	5	Lake Michigan	East Bay Park (Milliken Park)
	83	Grand Traverse	6	Lake Michigan	Sayler Park
	84	Grand Traverse	7	Lake Michigan	Senior Center
	85	Grand Traverse	8	Lake Michigan	Sunset Park
	86	Grand Traverse	9	Lake Michigan	Traverse City State Park
	87	Grand Traverse	10	Lake Michigan	Volleyball Court Beach
	88	Grand Traverse	11	Lake Michigan	West End Beach
15	89	**Houghton**	1	Connecting	Chassell Beach
	90	Houghton	2	Connecting	Hancock City Beach
	91	Houghton	3	Connecting	Houghton City Beach
	92	Houghton	4	Connecting	Lake Linden Campground Beach
	93	Houghton	5	Connecting	Sandy Bottom Beach/ Dollar Bay
	94	Houghton	6	Lake Superior	Agate Beach
	95	Houghton	7	Lake Superior	McLain State Park Beach
16	96	**Huron**	1	Lake Huron	Bird Creek County Park
	97	Huron	2	Lake Huron	Caseville County Park
	98	Huron	3	Lake Huron	Harbor Beach City Park
	99	Huron	4	Lake Huron	Jenks County Park
	100	Huron	5	Lake Huron	McGraw County Park
	101	Huron	6	Lake Huron	Oak Beach County Park
	102	Huron	7	Lake Huron	Philp County Park
	103	Huron	8	Lake Huron	Port Crescent State Park - Camping Area
	104	Huron	9	Lake Huron	Port Crescent State Park - Day Use
	105	Huron	10	Lake Huron	Sleeper State Park
	106	Huron	11	Lake Huron	Thompson Park
	107	Huron	12	Lake Huron	Veterans Park
	108	Huron	13	Lake Huron	Wagener County Park
17	109	**Iosco**	1	Lake Huron	Alabaster Township Douglas Drive Beach Use Area
	110	Iosco	2	Lake Huron	Au Sable Township Park
	111	Iosco	3	Lake Huron	East Tawas City Park
	112	Iosco	4	Lake Huron	Gateway Park Beach
	113	Iosco	5	Lake Huron	MDOT Roadside Park - Three Mile Park
	114	Iosco	6	Lake Huron	Oscoda Township Beach
	115	Iosco	7	Lake Huron	Tawas City Park
	116	Iosco	8	Lake Huron	Tawas Point State Park Campground
	117	Iosco	9	Lake Huron	Tawas Point State Park-Day Use area
18	118	**Keweenaw**	1	Lake Superior	Eagle Harbor Beach
	119	Keweenaw	2	Lake Superior	Eagle River Beach
19	120	**Leelanau**	1	Lake Michigan	Elmwood/Greilikville Park & Beach

Appendix E.1. Great Lakes Beaches Monitored 2017.

County #	Total Beach #	County	County Beach #	Water Body	Beach Location
	121	Leelanau	2	Lake Michigan	Empire Municipal Beach
	122	Leelanau	3	Lake Michigan	Northport Bay Marina
	123	Leelanau	4	Lake Michigan	Suttons Bay - South Shore Park
	124	Leelanau	5	Lake Michigan	Suttons Bay Marina Park & Beach
20	125	**Mackinac**	1	Lake Huron	Kiwanis Beach
	126	Mackinac	2	Lake Michigan	US 2 Sand Dunes Beach (East of Brevort)
21	127	**Macomb**	1	Lake St. Clair	H.C.M.A. - Lake St. Clair Metropark Beach
	128	Macomb	2	Lake St. Clair	New Baltimore Park Beach
	129	Macomb	3	Lake St. Clair	St. Clair Shores Memorial Park Beach
22	130	**Manistee**	1	Lake Michigan	Bar Lake Outlet
	131	Manistee	2	Lake Michigan	Fifth Avenue Beach
	132	Manistee	3	Lake Michigan	First Street Beach
23	133	**Marquette**	1	Lake Superior	Marquette South Beach
	134	Marquette	2	Lake Superior	McCarty's Cove
	135	Marquette	3	Lake Superior	North Beach
	136	Marquette	4	Lake Superior	North of Picnic Rocks
	137	Marquette	5	Lake Superior	Shiras Park Beach
24	138	**Mason**	1	Lake Michigan	Bass Lake Outlet Beach
	139	Mason	2	Lake Michigan	Buttersville Park Beach
25	140	**Menominee**	1	Lake Michigan	Henes Park
	141	Menominee	2	Lake Michigan	Memorial Beach
26	142	**Monroe**	1	Lake Erie	Luna Pier City Beach
	143	Monroe	2	Lake Erie	Sterling State Park
27	144	**Muskegon**	1	Connecting	Duck Lake Channel Beach
	145	Muskegon	2	Lake Michigan	Bronson/Kruse Park
	146	Muskegon	3	Lake Michigan	Lake Harbor Park
	147	Muskegon	4	Lake Michigan	Lighthouse/Sylvan Beach
	148	Muskegon	5	Lake Michigan	Medbury Park Beach
	149	Muskegon	6	Lake Michigan	Meinert County Park
	150	Muskegon	7	Lake Michigan	Muskegon State Park
	151	Muskegon	8	Lake Michigan	Muskegon State Park-North Campground Beach
	152	Muskegon	9	Lake Michigan	Old Channel Beach
	153	Muskegon	10	Lake Michigan	P.J. Hoffmaster State Park - Campground
	154	Muskegon	11	Lake Michigan	P.J. Hoffmaster State Park - Public Beach Area
	155	Muskegon	12	Lake Michigan	Pere Marquette Park
	156	Muskegon	13	Lake Michigan	Pioneer County Park
28	157	**Oceana**	1	Lake Michigan	Claybanks Township Park
29	158	**Ontonagon**	1	Lake Superior	Ontonagon Township Park and Campground
	159	Ontonagon	2	Lake Superior	Porcupine Mountains State Park- Union Bay
30	160	**Ottawa**	1	Lake Michigan	Grand Haven State Park
	161	Ottawa	2	Lake Michigan	Holland State Park
	162	Ottawa	3	Lake Michigan	North Beach Park
	163	Ottawa	4	Lake Michigan	Tunnel Park
	164	Ottawa	5	Lake Michigan	Windsnest Park
31	165	**Sanilac**	1	Lake Huron	Forester County Park
	166	Sanilac	2	Lake Huron	Forestville Beach
	167	Sanilac	3	Lake Huron	Lexington Beach
	168	Sanilac	4	Lake Huron	Lexington County Park
	169	Sanilac	5	Lake Huron	Port Sanilac Park
32	170	**Schoolcraft**	1	Lake Michigan	Public Shoreline Beach-Thompson
	171	Schoolcraft	2	Lake Michigan	Rogers Park-MDOT
33	172	**St. Clair**	1	Connecting	Chrysler Park Beach
	173	St. Clair	2	Connecting	Marine City Beach
	174	St. Clair	3	Lake Huron	Conger-Lighthouse Beach
	175	St. Clair	4	Lake Huron	Fort Gratiot County Park
	176	St. Clair	5	Lake Huron	Holland Road Beach
	177	St. Clair	6	Lake Huron	Keewadhin Road Beach
	178	St. Clair	7	Lake Huron	Lakeport State Campground
	179	St. Clair	8	Lake Huron	Lakeside Beach
34	180	**Van Buren**	1	Lake Michigan	Covert Township Park Beach

County #	Total Beach #	County	County Beach #	Water Body	Beach Location
	181	Van Buren	2	Lake Michigan	South Haven North Beach
	182	Van Buren	3	Lake Michigan	South Haven South Beach
	183	Van Buren	4	Lake Michigan	Van Buren State Park Beach
35	184	**Wayne**	1	Connecting	Belle Isle Beach
	185	Wayne	2	Lake St. Clair	Pier Park

County #	Total Beach #	County	County Beach #	Water Body	Beach Location
1	1	**Alcona**	1	Lake Huron	Black River Public Access
	2	Alcona	2	Lake Huron	Harrisville Public Access
	3	Alcona	3	Lake Huron	Negwegon State Park
	4	Alcona	4	Lake Huron	Point Rd. Beach
	5	Alcona	5	Lake Huron	Public Shoreline Beach-Huron National Forest North
	6	Alcona	6	Lake Huron	Public Shoreline Beach-Huron National Forest South
	7	Alcona	7	Lake Huron	Trask Lake Road Beach
2	8	**Alger**	1	Lake Superior	Au Train Beach
	9	Alger	2	Lake Superior	Bay Furnace Recreation Area Beach
	10	Alger	3	Lake Superior	Christmas Beach
	11	Alger	4	Lake Superior	Grand Marais Harbor Beach
	12	Alger	5	Lake Superior	Grand Marais Township Beach
	13	Alger	6	Lake Superior	Hurricane Campground Beach
	14	Alger	7	Lake Superior	Miners Beach
	15	Alger	8	Lake Superior	Munising Beach
	16	Alger	9	Lake Superior	Public Shoreline Beach-Au Train Bay
	17	Alger	10	Lake Superior	Public Shoreline Beach-Au Train to Five Mile Pts
	18	Alger	11	Lake Superior	Public Shoreline Beach-East County Border area
	19	Alger	12	Lake Superior	Public Shoreline Beach-Grand Sable Dunes
	20	Alger	13	Lake Superior	Public Shoreline-Grand Portal Point
	21	Alger	14	Lake Superior	Public Shoreline-Sand Point to Miners Castle Point
	22	Alger	15	Lake Superior	Rathfoot Park Beach
	23	Alger	16	Lake Superior	Roadside Park
	24	Alger	17	Lake Superior	Sand Point
	25	Alger	18	Lake Superior	Twelve-Mile Beach
3	26	**Alpena**	1	Lake Huron	3
	27	Alpena	2	Lake Huron	Bay View Park
	28	Alpena	3	Lake Huron	Elcajon Bay
	29	Alpena	4	Lake Huron	Issineke Hardwood Point
	30	Alpena	5	Lake Huron	Michekewis Beach
	31	Alpena	6	Lake Huron	Negwegon State Park-Ossineke South Point
	32	Alpena	7	Lake Huron	Ossineke Campground
	33	Alpena	8	Lake Huron	Ossineke State Park
	34	Alpena	9	Lake Huron	Partridge Point
	35	Alpena	10	Lake Huron	Rock Port Beach
	36	Alpena	11	Lake Huron	Thompson Park
	37	Alpena	12	Lake Huron	Whitefish Bay
4	38	**Antrim**	1	Grand Traverse Bay-East	Petobego Pond Area
	39	Antrim	2	Lake Michigan	Antrim County Day Park North
	40	Antrim	3	Lake Michigan	Antrim Creek Natural Area
	41	Antrim	4	Lake Michigan	Echo Township Park
	42	Antrim	5	Lake Michigan	Elk Rapids Park
	43	Antrim	6	Lake Michigan	Erickson Road
	44	Antrim	7	Lake Michigan	Lore Road End Beach
	45	Antrim	8	Lake Michigan	Michigan Trail
	46	Antrim	9	Lake Michigan	Nature Preserve
	47	Antrim	10	Lake Michigan	North Bay Shore (Conservancy)
	48	Antrim	11	Lake Michigan	O'Dell Road
	49	Antrim	12	Lake Michigan	Road Crossing near Winters Road
5	50	**Arenac**	1	Inner Saginaw Bay	Augres Township Park Beach
	51	Arenac	2	Inner Saginaw Bay	Booth Road Beach
	52	Arenac	3	Inner Saginaw Bay	City of Au Gres Public Access
	53	Arenac	4	Inner Saginaw Bay	Gordon Road Beach
	54	Arenac	5	Inner Saginaw Bay	Terrace Road
	55	Arenac	6	Saginaw Bay	Whites Beach- Isle Rd Ramp
	56	Arenac	7	Saginaw Bay	Whites Beach-Circle Rd Ramp
	57	Arenac	8	Saginaw Bay	Whites Beach-Point Rd-Culvert
	58	Arenac	9	Saginaw Bay	Whites Beach-Wenonah Rd-West Ramp
	59	Arenac	10	Saginaw Bay Inner-Lake Huron	Au Sable State Forest- Greens Point
	60	Arenac	11	Saginaw Bay-Lake Huron	16th Street Beach
	61	Arenac	12	Saginaw Bay-Lake Huron	28th Street Beach
	62	Arenac	13	Saginaw Bay-Lake Huron	Pump Station
6	63	**Baraga**	1	Huron Bay / Lake Superior	Arvon Township Park
	64	Baraga	2	Keweenaw Bay / Lake Superior	Baraga State Park
	65	Baraga	3	Keweenaw Bay / Lake Superior	First Sand Beach
	66	Baraga	4	Keweenaw Bay / Lake Superior	L'Anse Township Park
	67	Baraga	5	Keweenaw Bay / Lake Superior	Second Sands Beach
	68	Baraga	6	Lake Superior	Keweenaw Bay Village Public Roadside Park

County #	Total Beach #	County	County Beach #	Water Body	Beach Location
	69	Baraga	7	Lake Superior	Mouth of the Huron River
	70	Baraga	8	Lake Superior	Public Shoreline Beach-Cooper Country Huron Bay
	71	Baraga	9	Lake Superior	Public Shoreline Beach-Northwest Abbaye Peninsula
	72	Baraga	10	Lake Superior	Public Shoreline Beach-Point Abbaye
	73	Baraga	11	Lake Superior	Public Shoreline Beach-Sand Point
7	74	**Bay**	1	Saginaw Bay	Nayanquing Point Wildlife Area
8	75	**Benzie**	1	Lake Michigan	County Road # 669
	76	Benzie	2	Lake Michigan	Elberta Village Beach & Bluffs
	77	Benzie	3	Lake Michigan	Platte River Point
	78	Benzie	4	Lake Michigan	Point Betsie Lighthouse Beach
	79	Benzie	5	Lake Michigan	Zettenberg Preserve
9	80	**Berrien**	1	Lake Michigan	Galien River Park
	81	Berrien	2	Lake Michigan	Gordon Beach
	82	Berrien	3	Lake Michigan	Grand Mere State Park- Rosemary Beach
	83	Berrien	4	Lake Michigan	Grand Mere State Park- Shoreline Beach
	84	Berrien	5	Lake Michigan	Grand Mere State Park- Waverland Beach
	85	Berrien	6	Lake Michigan	Harbert Beach
	86	Berrien	7	Lake Michigan	Mizpah Park
	87	Berrien	8	Lake Michigan	Warren Dunes State Park North
10	88	**Charlevoix**	1	Lake Michigan	Bill Wagner Memorial Campground Beach
	89	Charlevoix	2	Lake Michigan	Cables Bay Beach
	90	Charlevoix	3	Lake Michigan	Donegal Bay
	91	Charlevoix	4	Lake Michigan	Harbor Beach
	92	Charlevoix	5	Lake Charlevoix	Peninsula Beach
	93	Charlevoix	6	Lake Charlevoix	Tannery Park
	94	Charlevoix	7	Lake Michigan	Iron Ore Bay Beach
11	95	**Cheboygan**	1	Lake Huron	Alexander Henry Park
	96	Cheboygan	2	Lake Huron	Cheboygan City Park
	97	Cheboygan	3	Lake Huron	Cheboygan State Park Duncan Bay
	98	Cheboygan	4	Lake Huron	Cheboygen State Park- Lighthouse Point
	99	Cheboygan	5	Lake Huron	Ditta Park
	100	Cheboygan	6	Lake Huron	Huron Street Beach
	101	Cheboygan	7	Lake Huron	Mackinaw City Beach
	102	Cheboygan	8	Lake Huron	Mackinaw City Lighthouse Park
	103	Cheboygan	9	Lake Huron	Mill Creek Public Access
	104	Cheboygan	10	Lake Huron	Pinewood Circle Road End Beach
	105	Cheboygan	11	Lake Huron	Roadside Park MDOT, US-23
	106	Cheboygan	12	Lake Huron	Stoney Point Road End Beach
	107	Cheboygan	13	Lake Huron	Wawatam City Park
12	108	**Chippewa**	1	Lake Huron	Bass Cove Beach-Drummond Island
	109	Chippewa	2	Lake Huron	Betsey Seaman Memorial Park-Drummond Island
	110	Chippewa	3	Lake Huron	Big Shoal Cove
	111	Chippewa	4	Lake Huron	De Tour State Park Shoreline Beach
	112	Chippewa	5	Lake Huron	Detour Albany Beach
	113	Chippewa	6	Lake Huron	Drummond Island Township Park
	114	Chippewa	7	Lake Huron	Sand Bay Beach-Drummond Island
	115	Chippewa	8	Lake Superior	Back Bay Boat Launch
	116	Chippewa	9	Lake Superior	Bayview Campground
	117	Chippewa	10	Lake Superior	Big Pines Day Use Area
	118	Chippewa	11	Lake Superior	Hiawatha National Forest- Nodoway Point Area
	119	Chippewa	12	Lake Superior	Hiawatha National Forest- North of Big Pine Picnic
	120	Chippewa	13	Lake Superior	Hiawatha National Forest- Pendills Bay
	121	Chippewa	14	Lake Superior	Hiawatha National Forest- Pendills Lake
	122	Chippewa	15	Lake Superior	Hiawatha National Forest- Point Iroquois Light
	123	Chippewa	16	Lake Superior	Hiawatha National Forest- Tahquamenon Bay
	124	Chippewa	17	Lake Superior	Hiawatha National Forest- West of Salt Point
	125	Chippewa	18	Lake Superior	Pendills Beach
	126	Chippewa	19	Lake Superior	Public Shoreline Beach-Browns Creek Area
	127	Chippewa	20	Lake Superior	Public Shoreline Beach-Marsh Lake Area
	128	Chippewa	21	Lake Superior	Public Shoreline Beach-Northwest of Two Mile Lake
	129	Chippewa	22	Lake Superior	Public Shoreline Beach-Weatherhog Lake East Area
	130	Chippewa	23	Lake Superior	Public Shoreline Beach-Weatherhog Lake West
	131	Chippewa	24	Lake Superior	Public Shoreline Beach-West of Whitefish Point
	132	Chippewa	25	Lake Superior	Superior Township Public Access
	133	Chippewa	26	Lake Superior	Tahquamenon Falls State Park-River Mouth Unit
	134	Chippewa	27	Lake Superior	Whitefish Bay Picnic Area
	135	Chippewa	28	St. Mary's River	Dunbar Park
	136	Chippewa	29	St. Mary's River	Hiawatha National Forest- North Pond

County #	Total Beach #	County	County Beach #	Water Body	Beach Location
	137	Chippewa	30	St. Mary's River	Hiawatha National Forest- Waiska Bay
	138	Chippewa	31	St. Mary's River	Lake Superior State Forest- Munuscong Lake
	139	Chippewa	32	St. Mary's River	Public Shoreline Beach-Brush Point
	140	Chippewa	33	St. Mary's River	Public Shoreline Beach-Point Aux Frenes
	141	Chippewa	34	St. Mary's River	Public Shoreline Beach-Raber Bay stretch
	142	Chippewa	35	St. Mary's River	Wilderness Beach
13	143	**Delta**	1	Lake Michigan	Big Bay De Noc - Fishdam River Access
	144	Delta	2	Lake Michigan	Fayette State Park
	145	Delta	3	Lake Michigan	Fuller Park
	146	Delta	4	Lake Michigan	Little Bay De Noc Public Beach Access
	147	Delta	5	Lake Michigan	Portage Bay Forest Campground
	148	Delta	6	Lake Michigan	Public Shoreline Beach-Charboneau Point
	149	Delta	7	Lake Michigan	Public Shoreline Beach-County Road 481
	150	Delta	8	Lake Michigan	Public Shoreline Beach-East Wilsey Bay
	151	Delta	9	Lake Michigan	Public Shoreline Beach-Fishdam River
	152	Delta	10	Lake Michigan	Public Shoreline Beach-Gilnet Haven
	153	Delta	11	Lake Michigan	Public Shoreline Beach-Indian Point
	154	Delta	12	Lake Michigan	Public Shoreline Beach-Indian Town Lake USFS
	155	Delta	13	Lake Michigan	Public Shoreline Beach-Jacks Bluff
	156	Delta	14	Lake Michigan	Public Shoreline Beach-Martin Bay
	157	Delta	15	Lake Michigan	Public Shoreline Beach-Nahma
	158	Delta	16	Lake Michigan	Public Shoreline Beach-North End of Kregg Bay
	159	Delta	17	Lake Michigan	Public Shoreline Beach-North of Stonington
	160	Delta	18	Lake Michigan	Public Shoreline Beach-Ogontz Bay
	161	Delta	19	Lake Michigan	Public Shoreline Beach-Peninsula Point
	162	Delta	20	Lake Michigan	Public Shoreline Beach-Point Detour
	163	Delta	21	Lake Michigan	Public Shoreline Beach-Portage Bay
	164	Delta	22	Lake Michigan	Public Shoreline Beach-Portage Peninsula
	165	Delta	23	Lake Michigan	Public Shoreline Beach-St. Vital's Island
	166	Delta	24	Lake Michigan	Public Shoreline Beach-USFS West Wilsey Bay
	167	Delta	25	Lake Michigan	Public Shoreline Beach-West Side of Kregg Bay
	168	Delta	26	Lake Michigan	Sac Bay County Park
	169	Delta	27	Lake Michigan	Twin Springs Campground and Bathing Beach
14	170	**Emmet**	1	Lake Michigan	Bliss Township Beach
	171	Emmet	2	Lake Michigan	Church Beach
	172	Emmet	3	Lake Michigan	Colonial Michilimamackinac State Park
	173	Emmet	4	Lake Michigan	Forest Beach
	174	Emmet	5	Lake Michigan	Petoskey Harbor
	175	Emmet	6	Lake Michigan	The Headlands County Park
	176	Emmet	7	Lake Michigan	Thorne Swift Preserve
	177	Emmet	8	Lake Michigan	Wilderness State Park-East of the Beach
	178	Emmet	9	Lake Michigan	Wilderness State Park-Sturgeon Bay
	179	Emmet	10	Lake Michigan	Wilderness State Park-West of Beach
15	180	**Gogebic**	1	Lake Superior	Black River Harbor Beach
	181	Gogebic	2	Lake Superior	Little Girls Point Park
	182	Gogebic	3	Lake Superior	Mouth of the Montreal River
	183	Gogebic	4	Lake Superior	Porcupine Mountain State Park-North
	184	Gogebic	5	Lake Superior	Presque Isle Beach
	185	Gogebic	6	Lake Superior	Presque Isle State Campground
	186	Gogebic	7	Lake Superior	Public Shoreline Beach-West of Black River
16	187	**Grand Traverse**	1	Grand Traverse Bay	Archie Park
	188	Grand Traverse	2	Grand Traverse Bay	Old Mission - Center Road Natural Area
	189	Grand Traverse	3	Grand Traverse Bay	Old Mission - MDOT Right of Way-South of M-37
	190	Grand Traverse	4	Grand Traverse Bay	Old Mission - Old Mission Point State Park
	191	Grand Traverse	5	Grand Traverse Bay-East	Acme Roadside Park & Beach MDOT
	192	Grand Traverse	6	Grand Traverse Bay-East	Acme Roadside Park (DNR)
	193	Grand Traverse	7	Grand Traverse Bay-East	Deep Water Point
	194	Grand Traverse	8	Grand Traverse Bay-East	East Bay Township Four Mile Road
	195	Grand Traverse	9	Grand Traverse Bay-East	Yuba Beach
	196	Grand Traverse	10	Grand Traverse Bay-Old Mission Peninsula	Bowers Harbor Public Access
	197	Grand Traverse	11	Grand Traverse Bay-Old Mission Peninsula	DNR Launch/Beach Center Road
	198	Grand Traverse	12	Grand Traverse Bay-Old Mission Peninsula	Haserot Beach
	199	Grand Traverse	13	Grand Traverse Bay-Old Mission Peninsula	Kroupa Road Access M-22 South of Crain Hill Road
	200	Grand Traverse	14	Grand Traverse Bay-Old Mission Peninsula	Leffingwell Point Beach
	201	Grand Traverse	15	Grand Traverse Bay-Old Mission Peninsula	Old Mission Lighthouse
	202	Grand Traverse	16	Grand Traverse Bay-Old Mission Peninsula	Old Mission Peninsula Twp Park-East of Light House
	203	Grand Traverse	17	Grand Traverse Bay-Old Mission Peninsula	Old Mission Peninsula Twp Park-West of Light House
	204	Grand Traverse	18	Grand Traverse Bay-Old Mission Peninsula	Old Mission Road

County #	Total Beach #	County	County Beach #	Water Body	Beach Location
	205	Grand Traverse	19	Grand Traverse Bay-Old Mission Peninsula	Peninsula Volunteer Fire Station Point #2
	206	Grand Traverse	20	Grand Traverse Bay-Old Mission Peninsula	Swaney Road
	207	Grand Traverse	21	Grand Traverse Bay-West	Mouth of Boardman
	208	Grand Traverse	22	Grand Traverse Bay-West	Power Island Bay Park
	209	Grand Traverse	23	Grand Traverse Bay-West	Rose Street Access at Peninsula Drive
17	210	**Houghton**	1	Lake Superior	Calument Waterworks Beach
	211	Houghton	2	Lake Superior	Mink Farm
	212	Houghton	3	Lake Superior	Public Shoreline Beach-Le Chance Creek
	213	Houghton	4	Lake Superior	Public Shoreline Beach-Mc Lain State Park
	214	Houghton	5	Lake Superior	Public Shoreline Beach-S. of Portage Entry
	215	Houghton	6	Lake Superior	Public Shoreline Beach-Southwest County Border
	216	Houghton	7	Lake Superior	White City
18	217	**Huron**	1	Lake Huron	County Road End
	218	Huron	2	Lake Huron	Geiger Road Public Access
	219	Huron	3	Lake Huron	Grindstone Public Access
	220	Huron	4	Lake Huron	Harbor Beach Marina
	221	Huron	5	Lake Huron	Helena Road End
	222	Huron	6	Lake Huron	Kinch Road End
	223	Huron	7	Lake Huron	Larned Road End
	224	Huron	8	Lake Huron	Lighthouse County Park
	225	Huron	9	Lake Huron	Lighthouse County Park-South
	226	Huron	10	Lake Huron	Mud Creek Public Acess
	227	Huron	11	Lake Huron	Stafford County Park
19	228	**Iosco**	1	Lake Huron	Alabaster Township - Alabaster Rd. end
	229	Iosco	2	Lake Huron	Au Sable Point Beach
	230	Iosco	3	Lake Huron	Interlake Road End
	231	Iosco	4	Lake Huron	Lake To Lake Road
	232	Iosco	5	Lake Huron	Tawas Point State Park-Central
	233	Iosco	6	Lake Huron (Tawas Bay)	County Road End off Tawas Beach Rd.
	234	Iosco	7	Lake Huron (Tawas Bay)	MDNR access E. Tawas
20	235	**Keweenaw**	1	Lake Superior	Brunette Park
	236	Keweenaw	2	Lake Superior	Cat Harbor Beach
	237	Keweenaw	3	Lake Superior	Cooper Harbor Lighthouse Complex
	238	Keweenaw	4	Lake Superior	Fort Wilkins State Park
	239	Keweenaw	5	Lake Superior	Fort Wilkins State Park-East
	240	Keweenaw	6	Lake Superior	Fort Wilkins State Park-West
	241	Keweenaw	7	Lake Superior	Great Sands Bay Beach
	242	Keweenaw	8	Lake Superior	Mouth of the Gratiot River Beach
	243	Keweenaw	9	Lake Superior	Point Isabelle Beach
	244	Keweenaw	10	Lake Superior	Public Shoreline Beach-Big Traverse Bay
	245	Keweenaw	11	Lake Superior	Public Shoreline Beach-Gay Park
	246	Keweenaw	12	Lake Superior at Bete de Gris Bay	Bete de Gris Beach
21	247	**Leelanau**	1	Grand Traverse Bay	Boughy Park & Beach
	248	Leelanau	2	Grand Traverse Bay-West	Cathead Bay, Leelanau State Park
	249	Leelanau	3	Grand Traverse Bay-West	Christmas Cove
	250	Leelanau	4	Grand Traverse Bay-West	Graham Green Park
	251	Leelanau	5	Grand Traverse Bay-West	Hendryx County Roadside Park
	252	Leelanau	6	Grand Traverse Bay-West	M-22 at M-72 Public Access
	253	Leelanau	7	Grand Traverse Bay-West	MDOT Roadside Park & Beach
	254	Leelanau	8	Grand Traverse Bay-West	MDOT Roadside Park & Beach M-22 N of Cherry Bend
	255	Leelanau	9	Grand Traverse Bay-West	Northport 4th Street Beach
	256	Leelanau	10	Grand Traverse Bay-West	Northport 5th Street Beach
	257	Leelanau	11	Grand Traverse Bay-West	Northport 7th Street Beach
	258	Leelanau	12	Grand Traverse Bay-West	Northport Haserot Beach, Rose Street
	259	Leelanau	13	Grand Traverse Bay-West	Omena Beach & Park
	260	Leelanau	14	Grand Traverse Bay-West	Stoney Point County Roadside Park
	261	Leelanau	15	Grand Traverse Bay-West	Suttons Bay North Shore Park
	262	Leelanau	16	Lake Michigan	Bay Front Park
	263	Leelanau	17	Lake Michigan	Cedar Street Beach
	264	Leelanau	18	Lake Michigan	G. Marsten Dame Marina
	265	Leelanau	19	Lake Michigan	Gils Pier
	266	Leelanau	20	Lake Michigan	Glen Arbor/Manitou Boulevard Beach
	267	Leelanau	21	Lake Michigan	Lake Street Beach, Glen Arbor
	268	Leelanau	22	Lake Michigan	Leelanau State Park, Lighthouse
	269	Leelanau	23	Lake Michigan	Leland Harbor
	270	Leelanau	24	Lake Michigan	North Bar
	271	Leelanau	25	Lake Michigan	North Street Beach
	272	Leelanau	26	Lake Michigan	Peterson Park

County #	Total Beach #	County	County Beach #	Water Body	Beach Location
	273	Leelanau	27	Lake Michigan	Reynolds Street Beach
	274	Leelanau	28	Lake Michigan	Smith Street Beach Northport
	275	Leelanau	29	Lake Michigan	Thompson Stree Beach
22	276	**Luce**	1	Lake Superior	Blind Sucker River # 1
	277	Luce	2	Lake Superior	Blind Sucker River # 2
	278	Luce	3	Lake Superior	Crisp Point Light House
	279	Luce	4	Lake Superior	Lake Superior Campground Beach
	280	Luce	5	Lake Superior	Mouth of the Two Hearted River Campground
	281	Luce	6	Lake Superior	Public Shoreline Beach-Blind Sucker Flooding Area
	282	Luce	7	Lake Superior	Public Shoreline Beach-Coast Guard Line Road
	283	Luce	8	Lake Superior	Public Shoreline Beach-County Rd 407
	284	Luce	9	Lake Superior	Public Shoreline Beach-County Rd 412 and Crisp Pt
	285	Luce	10	Lake Superior	Public Shoreline Beach-Little Sucker/Two Hearted R
	286	Luce	11	Lake Superior	Public Shoreline Beach-Three Mile Creek Area
	287	Luce	12	Lake Superior	Public Shoreline Beach-West County Border Beach
	288	Luce	13	Lake Superior	Unnamed Road End #1
	289	Luce	14	Lake Superior	Unnamed Road End #2
	290	Luce	15	Lake Superior	Unnamed Road End #3
23	291	**Mackinac**	1	Lake Huron	American Legion Memorial Park
	292	Mackinac	2	Lake Huron	Antoine Road End
	293	Mackinac	3	Lake Huron	Boot Island
	294	Mackinac	4	Lake Huron	Coast Guard Pier Boat Launch and City Park
	295	Mackinac	5	Lake Huron	Foley Creek Campground
	296	Mackinac	6	Lake Huron	Government Island-Hiawatha National Forest
	297	Mackinac	7	Lake Huron	Harbour Light
	298	Mackinac	8	Lake Huron	Hazelton Road End
	299	Mackinac	9	Lake Huron	Hiawatha National Forest- Carp River Access
	300	Mackinac	10	Lake Huron	Horseshoe Bay Wilderness-North
	301	Mackinac	11	Lake Huron	Horseshoe Bay Wilderness-South
	302	Mackinac	12	Lake Huron	Straits State Park
	303	Mackinac	13	Lake Michigan	Big Knob State Forest Campground
	304	Mackinac	14	Lake Michigan	Black River State Forest Campground
	305	Mackinac	15	Lake Michigan	Epoufette Bay Campground
	306	Mackinac	16	Lake Michigan	Hog Island Campground
	307	Mackinac	17	Lake Michigan	Lake Michigan US-2 Campground Beach
	308	Mackinac	18	Lake Michigan	MDOT Overlook
	309	Mackinac	19	Lake Michigan	MDOT Roadside Park on US 2
	310	Mackinac	20	Lake Michigan	Mouth of Cut River Roadside Beach
	311	Mackinac	21	Lake Michigan	Naubinway Bay Access
	312	Mackinac	22	Lake Michigan	Public Shoreline Beach #2-Little Hog Island area
	313	Mackinac	23	Lake Michigan	Public Shoreline Beach #2-Manitou Paymen
	314	Mackinac	24	Lake Michigan	Public Shoreline Beach #3-Little Hog Island area
	315	Mackinac	25	Lake Michigan	Public Shoreline Beach #4-Little Hog Island area
	316	Mackinac	26	Lake Michigan	Public Shoreline Beach #5-Little Hog Island area
	317	Mackinac	27	Lake Michigan	Public Shoreline Beach-Epoufette Bay
	318	Mackinac	28	Lake Michigan	Public Shoreline Beach-Fox Point Area
	319	Mackinac	29	Lake Michigan	Public Shoreline Beach-Little Hog Island area
	320	Mackinac	30	Lake Michigan	Public Shoreline Beach-Manitou Paymen Highbanks
	321	Mackinac	31	Lake Michigan	Public Shoreline Beach-MDNR Matrix Point Area
	322	Mackinac	32	Lake Michigan	Public Shoreline Beach-Morean Township, Section 25
	323	Mackinac	33	Lake Michigan	Public Shoreline Beach-Naubinway Area
	324	Mackinac	34	Lake Michigan	Public Shoreline Beach-Pointe Aux Chenes Bay
	325	Mackinac	35	Lake Michigan	Public Shoreline Beach-Seiners Point
	326	Mackinac	36	Lake Michigan	Public Shoreline Beach-South of Brevort River
	327	Mackinac	37	Lake Michigan	Public Shoreline Beach-State Forest Matrix Point
	328	Mackinac	38	Lake Michigan	Sand Point
	329	Mackinac	39	Lake Michigan	State Roadside Park Beach
24	330	**Manistee**	1	Lake Michigan	Arcadia Park
	331	Manistee	2	Lake Michigan	Magoon Creek
	332	Manistee	3	Lake Michigan	Onekama Township Beach
	333	Manistee	4	Lake Michigan	Orchard Beach State Park
	334	Manistee	5	Lake Michigan	Pierport Township Beach
	335	Manistee	6	Lake Michigan	Portage Park
	336	Manistee	7	Lake Michigan	Sundling Park
25	337	**Marquette**	1	Lake Superior	Public Shoreline Beach-Big Huron River
	338	Marquette	2	Lake Superior	Public Shoreline Beach-Little Presque Isle
26	339	**Mason**	1	Lake Michigan	Ludington State Park Campground Beach
	340		1	Lake Michigan	Ludington State Park Public Shoreline Beach North

County #	Total Beach #	County	County Beach #	Water Body	Beach Location
	341	Mason	1	Lake Michigan	Ludington State Park Public Shoreline Beach South
	342	Mason	2	Lake Michigan	Manistee National Forest Campground Beach
	343	Mason	3	Lake Michigan	Manistee National Forest-Public Shoreline Beach N
	344	Mason	4	Lake Michigan	Manistee National Forest-Public Shoreline Beach S
	345	Mason	5	Lake Michigan	South Pier Beach
	346	Mason	6	Lake Michigan	South Summit Beach - Sunset Boulevard Beach
	347	Mason	7	Lake Michigan	Stearns Park Beach
	348	Mason	8	Lake Michigan	Summit Township Beach
	349	Mason	9	Lake Michigan	Pere Marquette Harbor
27	350	**Menominee**	1	Lake Michigan	Airport Park
	351	Menominee	2	Lake Michigan	Fox Park
	352	Menominee	3	Lake Michigan	Klienke Park
	353	Menominee	4	Lake Michigan	Public Shoreline Beach-Cedar River
	354	Menominee	5	Lake Michigan	Public Shoreline Beach-Fox village
	355	Menominee	6	Lake Michigan	Wells State Park
28	356	**Oceana**	1	Lake Michigan	Cedar Point County Park
	357	Oceana	2	Lake Michigan	Lighthouse Beach at Silver Lake State Park
	358	Oceana	3	Lake Michigan	Mears State Park
	359	Oceana	4	Silver Lake	Silver Creek Channel
	360	Oceana	5	Lake Michigan	Silver Lake State Park
	361	Oceana	6	Stony Lake	Stony Lake Channel
	362	Oceana	7	Lake Michigan	Whiskey Creek
29	363	**Ontonagon**	1	Lake Superior	Green Park
	364	Ontonagon	2	Lake Superior	Gull Point Beach
	365	Ontonagon	3	Lake Superior	Mouth of the Big Iron River Beach
	366	Ontonagon	4	Lake Superior	Porcupine Mountain State Park
	367	Ontonagon	5	Lake Superior	Porcupine Mountains Wilderness State Park-West
	368	Ontonagon	6	Lake Superior	Public Shoreline Beach-Misery Bay
	369	Ontonagon	7	Lake Superior	Public Shoreline Beach-Sleeping Bay
	370	Ontonagon	8	Lake Superior	Public Shoreline Beach-Wolf Point
	371	Ontonagon	9	Lake Superior	Union Bay Beach
30	372	**Ottawa**	1	Lake Michigan	Grand Haven City Beach
	373	Ottawa	2	Lake Michigan	Kirk Park
	374	Ottawa	3	Lake Michigan	Kouw Park
	375	Ottawa	4	Lake Michigan	Mountain Beach
	376	Ottawa	5	Lake Michigan	P.J. Hoffmaster State Park- Shoreline Beach
	377	Ottawa	6	Lake Michigan	Rosy Mound Recreation Area
31	378	**Presque Isle**	1	Lake Huron	40 Mile Point Park
	379	Presque Isle	2	Lake Huron	Ball Diamond Park
	380	Presque Isle	3	Lake Huron	Bell Bay
	381	Presque Isle	4	Lake Huron	Evergreen Beach
	382	Presque Isle	5	Lake Huron	Golden Beach
	383	Presque Isle	6	Lake Huron	Grace Access Site
	384	Presque Isle	7	Lake Huron	Hammond Bay Access Site
	385	Presque Isle	8	Lake Huron	Hammond Bay Harbor
	386	Presque Isle	9	Lake Huron	Hoeft State Park-North
	387	Presque Isle	10	Lake Huron	Hoeft State Park-South
	388	Presque Isle	11	Lake Huron	Lakeside Park Beach
	389	Presque Isle	12	Lake Huron	Lakeside Park in Rogers City
	390	Presque Isle	13	Lake Huron	Lakeview Park Beach
	391	Presque Isle	14	Lake Huron	Manitou Beach
	392	Presque Isle	15	Lake Huron	New Lighthouse Park
	393	Presque Isle	16	Lake Huron	Presque Isle Harbor
	394	Presque Isle	17	Lake Huron	Presque Isle Harbor Beach
	395	Presque Isle	18	Lake Huron	Public Shoreline Beach-False Presque Isle Harbor
	396	Presque Isle	19	Lake Huron	Seagull Point Park
	397	Presque Isle	20	Lake Huron	Thompson's Harbor State Park
	398	Presque Isle	21	Lake Huron	US 23 Hammond Bay
	399	Presque Isle	22	Lake Huron	US 23 Roger City
32	400	**Sanilac**	1	Lake Huron	Birch Beach
	401	Sanilac	2	Lake Huron	Birch Beach Middle #2
	402	Sanilac	3	Lake Huron	Birch Beach North #3
	403	Sanilac	4	Lake Huron	Blue Water Beach
	404	Sanilac	5	Lake Huron	Delaware Park
	405	Sanilac	6	Lake Huron	Great Lakes Beach
	406	Sanilac	7	Lake Huron	Great Lakes Beach #1
	407	Sanilac	8	Lake Huron	Sanilac County Park #4
	408	Sanilac	9	Lake Huron	Sanilac County Roadside Park #1

County #	Total Beach #	County	County Beach #	Water Body	Beach Location
33	409	**Schoolcraft**	1	Lake Michigan	Doyle Township Access
	410	Schoolcraft	2	Lake Michigan	Goudreau's Harbor Seul Choix Point-Boat Landing
	411	Schoolcraft	3	Lake Michigan	Lakeview Park
	412	Schoolcraft	4	Lake Michigan	Manistique Township Park
	413	Schoolcraft	5	Lake Michigan	Public Shoreline Beach-S. of McDonald Lake
	414	Schoolcraft	6	Lake Michigan	Public Shoreline Beach-Thompson Village
	415	Schoolcraft	7	Lake Michigan	Roadside Park Beach
34	416	**St. Clair**	1	Lake Huron	Burtchville Township Park
	417	St. Clair	2	Lake Huron	Jeddo Road Beach
	418	St. Clair	3	Lake Huron	Krafft Road Beach
	419	St. Clair	4	Lake Huron	Lakeport State Park
	420	St. Clair	5	Lake Huron	Metcalf Road Beach
	421	St. Clair	6	Lake Huron	Washington Street Park
	422	St. Clair	7	St. Clair River	Marine City Diving Area

Appendix F.1. 2017 Daily Water Samples from Inland Lake Beaches that Exceeded Michigan's WQS

County	Total Beach #	County	County Beach #	Water Body	Beach Location	Sampling Date	*E. coli* Test Results
#	1	**Antrim**	1	Lake Bellaire	Richardi Park	6/26/2017	365.4
	2	Antrim	2	Lake Bellaire	Richardi Park	7/5/2017	307.6
	3	Antrim	3	Torch Lake	Day Park	7/31/2017	2419.6
2	4	**Benzie**	1	Crystal Lake	Beulah Beach	7/26/2017	2419.0
	5	Benzie	2	Crystal Lake	Beulah Beach	8/16/2017	649.0
3	6	**Chippewa**	1	Dukes Lake	Dukes Lake	8/22/2017	361.6
4	7	**Emmet**	1	Pickerel Lake	Camp Petosega	8/30/2017	2419.6
5	8	**Gladwin**	1	Ross Lake	Beaverton City Park	6/15/2017	1221.3
	9	Gladwin	2	Ross Lake	Beaverton City Park	7/13/2017	487.8
	10	Gladwin	3	Ross Lake	Beaverton City Park	7/19/2017	368.2
	11	Gladwin	4	Ross Lake	Beaverton City Park	7/27/2017	478.5
	12	Gladwin	5	Ross Lake	Beaverton City Park	8/2/2017	2419.6
	13	Gladwin	6	Ross Lake	Beaverton City Park	8/8/2017	897.0
6	14	**Livingston**	1	Pleasant Lake	Howell Nature Center	7/7/2017	419.0
	15	Livingston	2	Thompson Lake	Howell City Park	8/2/2017	547.5
7	16	**Macomb**	1	Stony Creek Lake-Impoundment	Stony Creek Metropark-Baypoint Beach	5/22/2017	824.5
8	17	**Midland**	1	Kiwassee Lake	Stratford Woods Park Beach	7/13/2017	334.8
	18	Midland	2	Kiwassee Lake	Stratford Woods Park Beach	8/22/2017	1007.2
9	19	**Muskegon**	1	Mona Lake	Ross Park Beach	7/18/2017	1203.0
	20	Muskegon	2	Muskegon Lake	Harbor Towne Beach	8/7/2017	2420.0
	21	Muskegon	3	White Lake	Maple Park	7/11/2017	2419.0
	22	Muskegon	4	White Lake	Maple Park	7/17/2017	1414.0
10	23	**Oakland**	1	Adams Lake	Addison Oaks Co. Park	7/12/2017	464.0
	24	Oakland	2	Orion Lake	Greens Park Village Beach	7/6/2017	548.0
	25	Oakland	3	Orion Lake	Greens Park Village Beach	7/12/2017	429.0
	26	Oakland	4	Scotch Lake	Scotch Lake Residents	7/12/2017	1954.0
	27	Oakland	5	Scotch Lake	Scotch Lake Residents	7/13/2017	892.0
	28	Oakland	6	Scotch Lake	Scotch Lake Residents	7/20/2017	407.0
	29	Oakland	7	Woodhull Lake	Woodhull Lake Civic Association	7/10/2017	506.0
	30	Oakland	8	Woodhull Lake	Woodhull Lake Civic Association	7/24/2017	1898.0
11	31	**Osceola**	1	Big Lake	Crittenden Park	7/5/2017	439.6
	32	Osceola	2	Big Lake	Crittenden Park	7/27/2017	2419.6
	33	Osceola	3	Muskegon River	Crawford Park	7/27/2017	351.5
12	34	**Otsego**	1	Otsego Lake	Otsego State Park	7/11/2017	461.0
	35	Otsego	2	Otsego Lake	Otsego State Park	8/29/2017	613.1
	36	Otsego	3	Otsego Lake	WahWahSoo Beach	8/22/2017	613.1
13	37	**Roscommon**	1	Higgins Lake	North Higgins State Park	6/15/2017	394.6
	38	Roscommon	2	Houghton Lake	Denton Township Public Beach	7/20/2017	601.1
	39	Roscommon	3	Houghton Lake	Houghton Lake Heights	8/3/2017	2265.6
	40	Roscommon	4	Lake St. Helen	Richfield Township Public Fishing Site	7/20/2017	389.3
14	41	**Washtenaw**	1	Independence Lake	Independence Lake County Park	7/21/2017	391.1
	42	Washtenaw	2	Independence Lake	Independence Lake County Park	7/27/2017	315.3
	43	Washtenaw	3	Independence Lake	Independence Lake County Park	8/7/2017	552.7
15	44	**Wayne**	1	Belleville Lake	Van Buren Township Park	7/24/2017	348.7
16	45	**Wexford**	1	Billings Lake	Manton Park	6/15/2017	351.9
	46	Wexford	2	Billings Lake	Manton Park	6/21/2017	410.6
	47	Wexford	3	Lake Cadillac	City Park	8/31/2017	344.8
	48	Wexford	4	Lake Mitchell	Mitchell State Park	7/11/2017	325.5
	49	Wexford	5	Lake Mitchell	Mitchell State Park	8/31/2017	488.4

County #	Total Beach #	County	County Beach #	Water Body	Beach Location	Sampling Date	*E. coli* Test Results
1	1	**Allegan**	1	Lake Michigan	Oval Beach	7/31/2017	2419.6
	2	Allegan	2	Lake Michigan	Pier Cove Beach	6/19/2017	727.0
2	3	**Antrim**	1	Lake Michigan	Elk Rapids	8/22/2017	461.1
3	4	**Arenac**	1	Saginaw Bay-Lake Huron	Arenac County Park	7/17/2017	1046.2
	5	Arenac	2	Saginaw Bay-Lake Huron	Dyer Road Beach	6/26/2017	601.5
	6	Arenac	3	Saginaw Bay-Lake Huron	Foster Road Beach	6/12/2017	1553.1
	7	Arenac	4	Saginaw Bay-Lake Huron	Singing Bridge Beach	6/6/2017	409.1
4	8	**Baraga**	1	Keweenaw Bay-Lake Superior	L'Anse Waterfront Park	6/26/2017	1271.9
5	9	**Bay**	1	Saginaw Bay-Lake Huron	Bay City State Recreation Area	6/14/2017	488.4
	10	Bay	2	Saginaw Bay-Lake Huron	Bay City State Recreation Area	8/3/2017	1046.2
	11	Bay	3	Saginaw Bay-Lake Huron	Bay City State Recreation Area	8/3/2017	1553.1
	12	Bay	4	Saginaw Bay-Lake Huron	Bay City State Recreation Area	8/17/2017	2419.6
	13	Bay	5	Saginaw Bay-Lake Huron	Bay City State Recreation Area	8/17/2017	2419.6
	14	Bay	6	Saginaw Bay-Lake Huron	Brissette Beach Township Park	7/13/2017	1203.3
	15	Bay	7	Saginaw Bay-Lake Huron	Brissette Beach Township Park	7/24/2017	344.8
	16	Bay	8	Saginaw Bay-Lake Huron	South Linwood Beach Township Park	6/1/2017	325.5
	17	Bay	9	Saginaw Bay-Lake Huron	South Linwood Beach Township Park	6/19/2017	579.4
	18	Bay	10	Saginaw Bay-Lake Huron	South Linwood Beach Township Park	6/19/2017	770.1
	19	Bay	11	Saginaw Bay-Lake Huron	South Linwood Beach Township Park	7/13/2017	648.8
	20	Bay	12	Saginaw Bay-Lake Huron	South Linwood Beach Township Park	7/13/2017	920.8
	21	Bay	13	Saginaw Bay-Lake Huron	South Linwood Beach Township Park	7/17/2017	365.4
	22	Bay	14	Saginaw Bay-Lake Huron	South Linwood Beach Township Park	8/3/2017	613.1
	23	Bay	15	Saginaw Bay-Lake Huron	South Linwood Beach Township Park	8/3/2017	488.4
	24	Bay	16	Saginaw Bay-Lake Huron	Wenona Beach	8/24/2017	461.1
6	25	**Charlevoix**	1	Lake Charlevoix	East Jordan Tourist Park	8/2/2017	1299.7
	26	Charlevoix	2	Lake Charlevoix	East Jordan Tourist Park	8/8/2017	547.5
7	27	**Chippewa**	1	Lake Superior	Sherman Park	8/17/2017	1263.0
	28	Chippewa	2	Lake Superior	Sherman Park	8/21/2017	1005.0
8	29	**Delta**	1	Lake Michigan	Escanaba Bathing Beach	6/12/2017	2419.6
	30	Delta	2	Lake Michigan	Escanaba Bathing Beach	7/11/2017	1753.4
9	31	**Emmet**	1	Lake Michigan	Cross Village Beach	7/12/2017	1553.1
	32	Emmet	2	Lake Michigan	Cross Village Beach	7/13/2017	320.6
	33	Emmet	3	Lake Michigan	Wilderness State Park	7/12/2017	920.8
10	34	**Grand Traverse**	1	Grand Traverse Bay-East	Bayside Acme Township Park	6/28/2017	387.0
	35	Grand Traverse	2	Grand Traverse Bay-East	Bayside Acme Township Park	7/19/2017	365.0
	36	Grand Traverse	3	Grand Traverse Bay-East	Bayside Acme Township Park	7/20/2017	1112.0
	37	Grand Traverse	4	Grand Traverse Bay-East	Traverse City State Park	7/12/2017	770.0
	38	Grand Traverse	5	Grand Traverse Bay-West	Sunset Park	7/19/2017	345.0
	39	Grand Traverse	6	Grand Traverse Bay-West	Sunset Park	7/20/2017	363.1
	40	Grand Traverse	7	Grand Traverse Bay-West	Sunset Park	7/21/2017	591.3
	41	Grand Traverse	8	Grand Traverse Bay-West	Sunset Park	7/24/2017	1054.4
	42	Grand Traverse	9	Grand Traverse Bay-West	Sunset Park	7/26/2017	687.0
11	43	**Huron**	1	Lake Huron	Bird Creek County Park	6/19/2017	1046.2
	44	Huron	2	Lake Huron	Bird Creek County Park	6/20/2017	517.2
	45	Huron	3	Lake Huron	Caseville County Park	7/13/2017	579.4
	46	Huron	4	Lake Huron	Caseville County Park	8/15/2017	360.9
	47	Huron	5	Lake Huron	Caseville County Park	8/23/2017	387.3
	48	Huron	6	Lake Huron	Jenks County Park	6/19/2017	1299.7
	49	Huron	7	Lake Huron	Jenks County Park	6/20/2017	461.1
	50	Huron	8	Lake Huron	Oak Beach County Park	8/23/2017	365.4
	51	Huron	9	Lake Huron	Port Crescent State Park - Day Use	8/3/2017	648.8
	52	Huron	10	Lake Huron	Sleeper State Park	8/3/2017	365.4
	53	Huron	11	Lake Huron	Thompson Park	8/23/2017	387.3
	54	Huron	12	Lake Huron	Wagener County Park	7/17/2017	517.2
12	55	**Iosco**	1	Lake Huron	Alabaster Township Douglas Drive Beach Use Area	6/20/2017	307.6
13	56	**Leelanau**	1	Grand Traverse Bay-West	Northport Bay Marina	7/26/2017	488.0
	57	Leelanau	2	Grand Traverse Bay-West	Northport Bay Marina	8/16/2017	325.0
	58	Leelanau	3	Grand Traverse Bay-West	Northport Bay Marina	8/17/2017	2419.0
	59	Leelanau	4	Grand Traverse Bay-West	Suttons Bay Marina Park & Beach	6/14/2017	1153.0
14	60	**Macomb**	1	Lake St. Clair	H.C.M.A. - Lake St. Clair Metropark Beach	5/17/2017	933.4
	61	Macomb	2	Lake St. Clair	H.C.M.A. - Lake St. Clair Metropark Beach	7/12/2017	522.7
	62	Macomb	3	Lake St. Clair	H.C.M.A. - Lake St. Clair Metropark Beach	7/13/2017	666.8
	63	Macomb	4	Lake St. Clair	H.C.M.A. - Lake St. Clair Metropark Beach	7/19/2017	757.7
	64	Macomb	5	Lake St. Clair	H.C.M.A. - Lake St. Clair Metropark Beach	7/20/2017	319.4
	65	Macomb	6	Lake St. Clair	H.C.M.A. - Lake St. Clair Metropark Beach	8/2/2017	1043.7
	66	Macomb	7	Lake St. Clair	New Baltimore Park Beach	7/26/2017	1210.3
	67	Macomb	8	Lake St. Clair	New Baltimore Park Beach	8/30/2017	372.7
	68	Macomb	9	Lake St. Clair	St. Clair Shores Memorial Park Beach	6/14/2017	455.1

County #	Total Beach #	County	County Beach #	Water Body	Beach Location	Sampling Date	*E. coli* Test Results
	69	Macomb	10	Lake St. Clair	St. Clair Shores Memorial Park Beach	7/5/2017	327.3
	70	Macomb	11	Lake St. Clair	St. Clair Shores Memorial Park Beach	7/26/2017	558.1
	71	Macomb	12	Lake St. Clair	St. Clair Shores Memorial Park Beach	8/16/2017	487.0
	72	Macomb	13	Lake St. Clair	St. Clair Shores Memorial Park Beach	8/21/2017	355.2
	73	Macomb	14	Lake St. Clair	St. Clair Shores Memorial Park Beach	8/30/2017	825.3
15	74	**Monroe**	1	Lake Erie	Luna Pier City Beach	7/11/2017	1088.7
16	75	**Muskegon**	1	Lake Michigan	Bronson/Kruse Park	8/1/2017	488.0
	76	Muskegon	2	Lake Michigan	Pere Marquette Park	7/26/2017	314.4
17	77	**Oceana**	1	Lake Michigan	Claybanks Township Park	8/22/2017	344.1
18	78	**Sanilac**	1	Lake Huron	Forestville Beach	7/25/2017	442.5
	79	Sanilac	2	Lake Huron	Lexington Beach	7/11/2017	401.7
19	80	**Schoolcraft**	1	Lake Michigan	Public Shoreline Beach-Thompson	7/18/2017	326.9
	81	Schoolcraft	2	Lake Michigan	Rogers Park-MDOT	6/14/2017	451.8
	82	Schoolcraft	3	Lake Michigan	Rogers Park-MDOT	7/12/2017	1652.0
	83	Schoolcraft	4	Lake Michigan	Rogers Park-MDOT	7/18/2017	380.1
20	84	**Wayne**	1	Detroit River	Belle Isle Beach	8/1/2017	532.3
	85	Wayne	2	Detroit River	Belle Isle Beach	8/29/2017	659.0

Appendix G.1. Beaches Monitored by National Park Service using Enterococci qPCR 2017.

County #	Total Beach #	County	County Beach #	Water Body	Beach Location
1	1	Benzie	1	Lake Michigan	Sleeping Bear Dunes-Esch Road Beach
	2	Benzie	2	Lake Michigan	Sleeping Bear Dunes-Platte Point Bay
	3	Benzie	3	Otter Creek	Sleeping Bear Dunes-Otter Creek
	4	Benzie	4	Platte River	Sleeping Bear Dunes-Platte River Outlet
2	5	Leelanau	1	Good Harbor Creek	Good Harbor Creek Outlet
	6	Leelanau	2	Lake Michigan	Sleeping Bear Dunes- CR 669 Good Harbor Bay
	7	Leelanau	3	Lake Michigan	Sleeping Bear Dunes-CR 651 Good Harbor Bay
	8	Leelanau	4	Lake Michigan	Sleeping Bear Dunes-Glen Haven Beach
	9	Leelanau	5	Lake Michigan	Sleeping Bear Dunes-North Bar Lake MI Beach
	10	Leelanau	6	North Bar Lake	Sleeping Bear Dunes-North Bar Lake
	11	Leelanau	7	Shalda Creek	Sleeping Bear Dunes- Shalda Creek

County #	Total Beach #	County	County Beach #	Water Body	Beach Location	Sampling Date	Entercocci Test Results
1	1	Benzie	1	Lake Michigan	Sleeping Bear Dunes-Platte Point Bay	6/23/2017	1540
	2	Benzie	2	Otter Creek	Sleeping Bear Dunes-Otter Creek	6/23/2017	1533
	3	Benzie	3	Otter Creek	Sleeping Bear Dunes-Otter Creek	7/20/2017	1509
	4	Benzie	4	Otter Creek	Sleeping Bear Dunes-Otter Creek	7/21/2017	1173
	5	Benzie	5	Otter Creek	Sleeping Bear Dunes-Otter Creek	8/2/2017	1894
	6	Benzie	6	Otter Creek	Sleeping Bear Dunes-Otter Creek	8/3/2017	1031
	7	Benzie	7	Platte River	Sleeping Bear Dunes-Platte River Outlet	6/23/2017	1288
2	8	Leelanau	1	Good Harbor Creek	Good Harbor Creek Outlet	6/13/2017	1273
	9	Leelanau	2	Good Harbor Creek	Good Harbor Creek Outlet	6/22/2017	2089
	10	Leelanau	3	Good Harbor Creek	Good Harbor Creek Outlet	6/27/2017	1274
	11	Leelanau	4	Good Harbor Creek	Good Harbor Creek Outlet	7/26/2017	2929
	12	Leelanau	5	Good Harbor Creek	Good Harbor Creek Outlet	7/28/2017	1177
	13	Leelanau	6	Good Harbor Creek	Good Harbor Creek Outlet	8/1/2017	1463
	14	Leelanau	7	Good Harbor Creek	Good Harbor Creek Outlet	8/3/2017	1755
	15	Leelanau	8	Good Harbor Creek	Good Harbor Creek Outlet	8/22/2017	1161
	16	Leelanau	9	Shalda Creek	Sleeping Bear Dunes- Shalda Creek	6/22/2017	1142
	17	Leelanau	10	Shalda Creek	Sleeping Bear Dunes- Shalda Creek	6/23/2017	1100
	18	Leelanau	11	Shalda Creek	Sleeping Bear Dunes- Shalda Creek	7/26/2017	1887
	19	Leelanau	12	Shalda Creek	Sleeping Bear Dunes- Shalda Creek	8/1/2017	1215