

Water WoRDs

Updates from the Water Resources Division



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Monitoring the Beaches of Pure Michigan

Have you taken a trip to the beach yet this season? While many are out enjoying some Pure Michigan vacation time, staff at the Department of Environmental Quality's (DEQ) Water Resources Division (WRD) continue to work with our local partners to provide Michigan's citizens and visitors the best possible information on water quality at our beaches.



The WRD's Beach Monitoring Program protects public health by working with various stakeholders to identify and eliminate sources of contamination at beaches. To facilitate this goal, a Web site called [BeachGuard](#) was created to provide maps, descriptions of facilities, and the most recent monitoring information for public beaches. The public is notified online and at the beach if there is a closure or an advisory as soon as the results are available to local health agencies.

The WRD also publishes an [annual beach monitoring report](#). The 2012 report summarizes 5,801 water samples from 423 monitored beaches. The report provides the total number of exceedances of water quality standards, total number of actions (closure/advisory), and identifies known contamination sources for both Great Lakes and inland beaches. Tracking and identifying contamination sources helps federal, state, and local agencies gain a better understanding of the causes of beach closures and advisories. For example, heavy rains will increase storm water runoff and may contaminate a beach area. Another beach may need to groom more often and install landscaping that deters birds to prevent contamination. The report also compares E. coli levels over time providing a broader view of the water quality at Michigan beaches.

Contamination Sources and Beach Closures

Beach closures or advisories (collectively referred to as "actions") may be issued by local health departments if water tests reveal E. coli levels higher than the state standard. Sources of contamination leading to high bacteria levels include runoff and sewer overflows from large rain events, nearby wildlife, and sewer leaks. While high levels of bacteria are the largest contributor to beach closures and advisories, other

events such as chemical or oil spills may also cause beach closures. Although bacterial sources are identified and documented for some events, there is still a lot of work to do since most actions report the source as “unknown.”

Some of the actions with unknown sources of contamination may be impacted by failing septic systems around the state. Michigan does not have a statewide sanitary code or regulations on how septic tanks are built or maintained. Based on county level reports, it is estimated that at least 100,000 septic tanks are failing or not being maintained. Even more disturbing, there have been some instances where houses are found to have no septic system at all. The sewage from these houses is capable of contaminating both inland lakes and the Great Lakes. [An article in the Bridge Magazine by Jeff Alexander](#) contains some useful maps and tables of DEQ septic tank data by county.

Water quality standards in Michigan protect for total body contact from May 1 – October 31 (the 184 day beach recreation season). This is the timeframe that health departments may post an action at a beach. Beaches may have more than one action throughout the season, and an action may last one day or several days. Every year, the number of action days for every monitored beach in Michigan is added up and the total number of action days is provided in the annual beach report (the total was 755 beach days in 2012). The number of action days serves as a convenient measure to compare from year to year and between states, but admittedly can cause confusion if mistakenly compared to a traditional 365 day calendar

Identify and Eliminate Sources

Corrective actions are taken by the DEQ and local authorities as contamination sources are identified. In addition, remediation efforts are ongoing at several beaches that historically exceeded water quality standards. The Great Lakes Restoration Initiative (GLRI) provides federal grants administered by the U.S. Environmental Protection Agency for these remediation efforts. Starting in 2010, the DEQ and local partners (including local health departments) have been awarded several GLRI grants to investigate, identify, and correct sources of contamination at beaches. In 2012, GLRI grants were awarded for projects in Marquette, Marysville, Harrison Township, Sault Ste. Marie, and New Buffalo. These projects are focused on using green infrastructure and include specific plans such as redirecting storm water discharges, planting rain gardens to reduce runoff, and replacing impervious surfaces with more porous surfaces that can collect water. The list of all GRLI projects 2010 – 2012 can be found on the [GLRI website](#).

The Illicit Discharge Elimination Program (IDEP) is also helpful in reducing the contamination of shorelines, among other water bodies. The IDEP inspects local drainage systems to identify and eliminate any incorrect connections that could lead to increased water pollution. In this way, the IDEP can serve as both a corrective and preventative measure. Further details can be found in the [Michigan Municipal Separate Storm Sewer System \(MS4\) Permit](#).

Very recently, the GLRI funded a project involving real-time predictive data for certain areas of the Great Lakes. This new tool is part of the [NOAA Great Lakes Beach, Tributary, and Nearshore Water Quality Project](#). Between advances like real-time predictive modeling and ongoing public interfaces like BeachGuard and the [MyBeachCast app for Android](#) smartphones, those who enjoy a day at the beach have more information at their fingertips than ever before to plan a perfect Pure Michigan adventure.

What do you do in the WRD?

Meet Meredith Hipp and Tom Latchney:

Meredith and Tom began interning with the WRD's beach monitoring guru, Shannon Briggs, in May of 2013. As an avid beach-goer and swimmer, Meredith knows the importance of safe and clean water and is thrilled to work with the beach monitoring data at the DEQ. Meredith received her bachelor's degree from Michigan State University in Natural Sciences (Human Biology) and is currently working on a Master's Public Health Degree in Environmental



Health Sciences from the University of South Carolina. She is working on assignments that include the annual beach report and the biennial Integrated Report.

Tom will begin his second year of graduate school this fall at The University of Michigan School of Public Health, where he is studying Environmental Quality and Health in the Environmental Health Sciences Department. During his internship, Tom has been focusing on water quality issues at beaches along Lake St. Clair in Macomb County. Historically high levels of E. coli at Lake St. Clair beaches have created an unsafe environment for swimmers and have led to a high number of closure days in the past decade. Tom is reviewing water quality data from beaches along Lake St. Clair and is finding trends that can be analyzed to suggest differences or similarities between the beaches and possible sources of pollution (shore-wide vs. beach specific). Comparing monitoring data with waterborne disease frequency could potentially identify a link between the water quality issues and public health status. Tom is also looking to connect with Canadian beaches along Lake St. Clair, as examining data from both sides of the Lake may better illustrate the Lake's overall health.