Indicators for Narragansett Bay Region
WORKSHOP REPORT
Beach Closures
Tuesday, October 12, 2010
Warwick Public Library

Recommended Beach Closure Indicator:

The group recommended a multi-part indicator with the following metrics:
   # closure events
   # days closed
   # samples analyzed
   % exceed standard
   Inches precipitation

Additional metrics to consider:

- ✓ # of beaches accounting for most of the closures (eg. 3 beaches account for 80 % of the closures)
- ✓ Closure rates by beach. The group thought that beach by beach data are more useful than the beach closure numbers by town presented at the workshop[1].
- ✓ Stormwater management projects ($$ spent on stormwater management for each beach or for each town)
- ✓ DOH identified sources affecting each beach
- ✓ Consider including off-season monitoring data. NBC generates data year round. Volunteer groups collect data during the off-season as well.

Workshop Recommendations for Beach Indicator/Beach policy, monitoring and outreach

I.   Policy
- Allow (perhaps encourage) beach usage at cleaner urban beaches. Modify laws/regulations (designate for primary recreation) and develop communication strategy. Post signs describing the beach condition and cautioning about swimming after rain.
- Extend the beach season. Many people are using beaches outside of the "summer" season specified in current law (Memorial Day – Labor Day).

II.   Monitoring
- Monitor freshwater beaches for cyanobacteria
- Year-round beach monitoring
- Monitor access points rather than just licensed beaches

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[1]   EPA's Flagship beach program http://www.epa.gov/region1/eco/beaches/index.html focuses on only a few beaches to highlight progress.

III. Communication
- Report on the 10 worst beaches from 2003 (DOH's Tier 1). Describe how problems have been addressed and results for beach openings.
- Include all beaches, but highlight those where remediation projects are under way.
- Include information on climate change – more intense precipitation events resulting in a first flush of pollutants, more variable precipitation patterns, etc. will all affect beach closures.
- Develop some case studies including perhaps CRMC (Jim Boyd) analysis of Greenwich Bay beaches showing changes likely due to sewering and perhaps CSO tunnel.
- Communicate about off-season beach conditions and risks for recreation.

IV. Research Questions
- Evaluate beach closures in areas with sewering vs. ISDS
- Collect information on bottom debris and substrate for urban beaches.
- Conduct an economic study to evaluate the costs and benefits of extending the beach season and to evaluate the costs of beach closures.
- Collect data on the number of visitors at each beach (in and out of state), their socio economic status and tax revenues from their beach visits.
- Conduct an epidemiological study looking at beach closures and illness to better characterize the risk.
- Look at presence of water fowl and relation to beach closures.
- Evaluate cyanobacteria in freshwater.
- Identify the sources of bacteria (CSO, wildlife, pets)
- Look at shellfish bed opening/closures. With tunnel in place, DEM is opening shellfish beds based on monitoring results. Look at # of days of open beds and compare to standard protocol (x days of closure after y inches of rain).

V. Projects
- Get urban beaches "on the map" and let people know that they are being monitored and that we are finding clean water much of the time.
- Improve DOH's illness forms available on the web
- Educate public on pet waste. Many beaches are used for dog walking and pet waste can be a big problem.

Workshop Presentations
(see http://www.ci.uri.edu/projects/indicators/NarrBayIndicators.html for copies of the powerpoint presentations used)

I.   Beach Closure indicators used by other NEPs   (Lesley Lambert)
Lesley provided a review of how beach closure is used as an indicator by NEPs throughout the country.

John Torgan said that Save the Bay worked closely with the staff working on the Chesapeake Bay State of the Bay indicator project. Two key recommendations – 1) avoid large scales (1 – 100) because

it is difficult to document changes and 2) no matter what indicators are selected, it is difficult to digest information into a metric and those in charge need editorial discretion.

II.   EPA beach program   (Matt Liebman)

In Oct 2000, the Beach Act was signed into law. This created grants to states for monitoring, assessment and notification of beach closures. The Act also required EPA to come up with better, rapid indicators for monitoring beaches. The Beach Act only applies to salt water beaches. In RI, the Department of Health implements the Beach program. During the implementation they have doubled the state's monitoring effort.

Under the Act, EPA has been working on more rapid notification of beach closures to public. EPA is working with a 2012 deadline to come up with a new more rapid indicator. The test under development is called PCR and it relies on DNA and can produce results in several hours. The scientists are still working on the relationship between PCR **(polymerase chain reaction)** and bacterial culture numbers – to date the relationship is not certain. One problem is that DNA tests identify both dead and viable bacteria. Once the test is available, it will still require a delay of approximately 6 hours. Test will also be more costly, so it is unlikely that it will be used everywhere. Most states will use the test on tier 1 beaches that are prone to exceedances (Boston Harbor for example).

EPA did epidemiological study at Goddard Beach looking at the relationship between swimming and disease. Water quality was basically good the entire time of the study, so data are a bit difficult to interpret. But combined with other sites, there was a relationship between illnesses and the enterococci PCR method.

EPA's regional beach initiative in New England and the national beach program uses state beach data to calculate several indicators. For example the region reports annually to HQ the total percentage of beach days open; the percent of tier 1 (highest priority) beaches monitored.
For the Region 1 beach initiative, they also report the number of closure days by state and among states, as well as the number of beaches reporting closures in any year.

Once EPA has established the new methods, EPA will most likely provide training in the methods (it already has -- the regional lab has helped some labs get up to speed).

III.   Assessment of "swimming use" by RIDEM   (Sue Kiernan)

RIDEM assesses water quality statewide under the Clean Water Act section 305b. States classify waters for their intended use –recreational use is one of the classified uses. DEM's standards do not distinguish between primary (swimming) and secondary (boating) recreational uses. This may change in the future as EPA is reviewing the recreational use, particularly looking at distinction between primary and secondary. For RI DEM, the bacteria standard for the recreational use is based on a geo-mean (hopefully 5 samples) for enterococci. Data are reviewed by waterbodies – not by individual beaches. To conduct the waterbody assessment, DEM looks at enterococci as well as beach closure data and fecal coliform data. DEM has a lot of fecal data from the shellfish program, and they do not have enterococci data in many areas. DEM uses beach closures as a signal of a potential problem. In order for beach closures to trigger an impaired assessment, the closures would have to happen frequently.

DEM does not permanently close off areas for recreational uses. DEM is interested in year round exposure – lots of people are in the water in fall and winter. DEM can consider all the data that comes in for their assessments.

IV.   DOH Beach Monitoring Program   (Amie Parris)

DOH's Beach program collects water quality data, conducts beach surveys, provides opportunity for people to log illness complaints on the DOH web site, collects information on seaweed mats because they relate to high bacteria levels, and tabulates sewage overflows provided by RIDEM.

DOH recently did a study looking at bacterial levels in sand at tier 1 beaches and compared these results to control beaches. The study showed high bacteria levels everywhere, even at control beaches. The bacteria numbers were highly variable and it was difficult to interpret the study's results.

Beaches are closed based on various data including bacteria levels, precipitation, algae, bather load, history, tides, nearby beaches, pollution sources and additional sampling. Beaches are closed for 24 hours. Easton's Beach and Scarborough automatically close after 1 inch of rain. Easton's automatically re-opens after 12 hours, Scarborough after 24 hours. Others re-open when DOH has received a clean sample. Some facilities do not re-sample so beach stays closed even though levels may have been restored.

Freshwater beaches monitor themselves – this year DOH increased frequency to 2x/month.

During 2010, DOH began the urban beach initiative. They identified public access points in the upper Bay and then monitored to see if the sites are safe for recreational use. The study began with a survey throughout the upper bay, looking at sites where people are swimming. They then selected 3 locations that are frequently used (Sabin Point in East Providence, Rosa Larisa Park (Crescent Park) in East Providence, Gaspee Point in Warwick). DOH collected Enterococci samples, did beach and sanitary surveys, and conducted personal interviews with people using the beach. All 3 locations had visitors throughout the summer.

Preliminary data analysis shows :
Sabin Point 11 % exceeded standard
Rosa Laris 8.8 % exceeded standard
Gaspee 14.5 % exceeded standard

Overall conditions were good – many samples were clean. An additional concern – trash on the bottom (glass etc).

V.   Volunteer Beach Monitoring   (Lauren Russo)

Clean Ocean Access and the Surfrider Foundation monitor licensed beaches for Enterococci and these data are used in determining closures. These volunteer groups also do off season monitoring to fill in gaps and monitor at non licensed access points.

Why should we care about off-season recreational water use? Winter water use is real –polar bear plunges attract hundreds of people and raise revenue for cities, towns etc. Surfing is also a big industry.

Collecting illness data from surfers using the DOH on-line survey is difficult because the data requested is too extensive. It is also difficult to relate illness to a specific date/time of surfing. It is also important to recognize that many surfers are from out of state.

Thank-you to all the workshop attendees:

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