



## Developing a Freshwater Quality Indicator for Watershed Counts

January 26, 2012 at Warwick Sandy Lane Library  
9:30 AM – 1:00 PM

### Workshop Goals:

- 1) To agree upon a long range vision for freshwater quality metrics for Watershed Counts
- 2) To agree upon indicator(s) that can be gleaned from existing studies and developed in the near term.

### Overview of Watershed Counts (*Q Kellogg, URI Coastal Institute*)

Watershed Counts is a broad coalition of agencies and organizations who have committed to work together to examine and report regularly on the condition of the land and water resources of the Narragansett Bay Watershed Region. In 2011, we started with five key indicators (climate change, impervious cover, beach closures, fresh water flow and invasive species). In 2012, we are adding freshwater quality, marine water quality, open space and an economic indicator. Additional indicators will be added during the next several years. These indicators will be used to describe the condition of the watershed region and communicate this information to the public and decision makers.

### Review of Freshwater Indicators (*Linda Green, URI Watershed Watch*)

Linda provided an overview of how other programs/states summarize freshwater quality information using indicators and indices.

A Water Quality Index can be developed by aggregating different parameters, then presenting with a simple graphic like a stop light. The advantage of an index is that it is easy to understand and communicates to a broad audience. Disadvantages include that the audience can easily miss the complexities behind the index, parameters can be missing, and various components can be weighted differently.

Indicators are needed for reporting to many audiences. Many decision makers do not understand tables of data, they need simple information communicating compliance with targets/standards (above, meeting, below), trends (upwards, staying the same, getting worse, no trend). Some examples:

- Report card (eg Charles River- single sample- A-F to identify meeting standards)
- Pawuxent River uses letter grades and links to the river section and a "how did we score" trend is also shown.
- Buzzards Bay has also developed an index based on 100 point value and make it clear up front that they do not use bacteria and it is not an indicator of shellfish beds. Also use

fish as a symbol and include photos of good versus bad. Provide a score card that ranks each stretch so folks can see how their area does.

#### Summary:

- It is valuable to develop an index
- Using graphics/symbols that are easily recognizable
- Include trends
- Express quantity of data behind the analysis

#### Q&A

- Concern about fish being used as the symbol because it can suggest that the metric is on fish consumption rather than the health of the ecosystem.
- Who is giving the grade? The organization itself decides the grade and use a specific index that is kept the same across the board for all sections. It is important to have underlying assumptions and data clearly summarized and available to the public.

#### **Summary of Massachusetts Water Quality Assessments (*Therese Beaudoin, MassDEP*)**

MassDEP monitoring in the Narragansett Bay watershed is conducted over a two-year period; the Blackstone was sampled in 2011, while the Taunton, Ten Mile, and Narragansett and Mount Hope Bay watersheds will be monitored next in 2013. Two regional offices serve these watersheds, with the Blackstone in the Central Regional Office (CERO) located in Worcester and the remaining watersheds by the SouthEast Regional Office (SERO) in Lakeville.

#### Aspects of assessment:

Surface waters, including rivers, streams, lakes and ponds, are divided into segments; these typically begin/end where water quality is expected to change (at a dam, WWTP discharge, tributary, etc). Segments are classified for their designated uses (drinking water supply, fish and wildlife habitat, shellfishing, etc.) according to the Clean Water Act. In addition to these, Massachusetts also looks at aesthetics.

External data used in the assessment process must meet the following requirements:

- An approved Quality Assurance Project Plan (QAPP)
- Use of a State certified lab for sample analysis
- Documentation of sample data (QA/QC) and other pertinent sample handling information in a citable report.

Status is reported as support, impaired, and not assessed, with an alert status applied to reaches that were not assessed but in which specific sources of pollution are known to exist.

MassDEP has also developed report cards for displaying assessment decisions using the “stop light” approach i.e., green indicates “support” and red “impaired”, while grey denotes a lack of sufficient information upon which to make an assessment decision. Each report card has

companion tables showing causes and sources of impairment, as well as meta data (ranked 1-4 based on the quantity, quality, timing et cetera of the data upon which the assessment decision was based).

The SMART program (Strategic Monitoring and Assessment for Riverbasin Teams) incorporates a three-tiered approach to watershed management, including federal, state, and local partners. Volunteers are particularly valued as the “eyes and ears on the ground” which can identify on-the-spot, real-time pollution issues, as well as stewards for watershed outreach. Watershed Action Plans have been developed for all of the Mass watersheds in the Narragansett Bay basin; each plan includes a list of preservation/restoration objectives and actions, and the value of each. Relative to monitoring, volunteer activities are most valuable on smaller tributaries and streams, which haven’t meshed with historical state monitoring objectives.

### **Summary of Rhode Island Water Quality Assessments (*Sue Kiernan, RI DEM*)**

Connie Carey is the sole assessment staff at RIDEM.

Since both state’s standards reflect guidance and protocol from EPA with the methodology also from EPA, there are only slight differences in the assessments done by the 2 states. The differences include:

- Design of field monitoring studies is executed differently and on different schedules in the two states. But the assessment allows for data across multiple years. (Ideal to monitor at the same time, but not critical)
- RI has a rotating basin approach similar to MA, but because RI is such a small state, we do more sampling in small headwater systems and have more understanding of our small streams.
- RI and MA use different indicators for pathogens (MA uses e coli, RI uses enterococci), but meeting or not meeting will be the same.
- RI does not identify waters as “at risk”
- Fish tissue is not collected in RI by the state. Most data generated comes from EPA. MA lists all waters as “at risk”, RI only lists waters where there is data.

Rhode Island’s rotating basin monitoring program has been on a 5 year schedule, but DEM is re-evaluating the program in an effort to complete the state in 3 to 4 years (50-60 stations per year).

### Q&A

Is the way the segmentation is done sufficient for both states?

RI’s segments are revised from time to time when new data suggests changes in impairment status. Massachusetts creates basin reports which compile the segment assessments into a single report. Massachusetts does not monitor intermittent streams, but RI does because assessments are done on headwater systems.

Can we do a better job collecting fish tissue data? Could RI use fish specimens collected during fish sampling or fishing contests?

RI “ramped up” fish sampling but staff cutbacks have eliminated this program. Fish tissue sampling on RI lakes showed that 77% of the lakes tested had fish with elevated mercury levels. These findings were interesting as many New England states find that all the fish have elevated levels of mercury. DEM has looked into using volunteer groups to help with sampling, but they do not have the resources to initiate and run a volunteer program. NE has reduced their sources of mercury over the last decade and there is a hope that more testing can be done to provide better trends. We also need to work with the Midwest to reduce their mercury emissions that contaminate RI waters.

EPA-AED has a program that is studying toxics and interactions in eutrophic systems. They are finding that mercury does not move up the food chain as quickly in highly eutrophic systems (Jim Lake). DEM is aware of this work and is using the data.

There is a greater need for getting information on fish toxics to urban communities, particularly people who subsistence fish in urban systems. We also need more signage (DOH is lead for this). There are signs around Mashapaug Pond and along the urban Woonasquatucket River, but the Blackstone River needs signage in several places. The RI DOH website has consumption warnings but they are not provided in multiple languages and it is unclear whether key user groups are getting the information. When we think about a fish consumption indicator, we need to consider that fishermen will not want to advertize that fishing is bad in RI.

### **Freshwater Quality Working Group’s approach (*Meg Kerr, Narragansett Bay Estuary Program*)**

Development of the freshwater quality indicator is funded by an EPA healthy communities grant. We are developing freshwater indicators for NBR under the leadership of the 4 watershed organizations that have staff: Wood-Pawcatuck, Woonasquatucket, Taunton and Blackstone. The 16 member freshwater quality working group has met regularly since September 2011 to develop a strategy for presenting freshwater quality information. The group has decided on the following approach:

- Start with rivers and streams. Bring in lakes and ponds as a second step.
- Base the indicator on the RI and MA water quality assessments prepared under section 305 (b) of the Clean Water Act
- Report on 3 indicators 1) Habitat (fish, aquatic life); 2) recreation (primary and secondary); 3) fish consumption
- Combine RI and MA assessments
- Present on a map with icons, with an underlying report card and links to data.

The report card and map will use the following colors:

- Blue if habitat and recreation are fully supporting
- Yellow if habitat or recreation are not supporting
- Red if habitat and recreation are not supporting

- Grey if the segment is not assessed

Next steps—

- The group is exploring assessments for healthy fish communities (because the public understands fish).
- Develop indicators for lakes and ponds
- Complete assessments for other subwatersheds
- Terry Meyer is working on the maps and Brian Jones will create the icons

Suggestions from the group:

Connie would suggest using aquatic life instead of habitat

Map should be GIS based so it can be used elsewhere and linked to other GIS data

EPA has been building an impairment database—GIS being developed. The system will allow a user to look at questions like -- Where do I have lakes that are impaired by invasives? The user would then follow a link to a GIS display. EPA is working on automating the reporting which will help build capacity at the state level. EPA is now looking into identifying the user needs and how it will be populated.

The report should include trends

This must all be tied to the science database and we should think about how this can be used as a tool to get people to understand and use the underlying data.

### Discussion:

#### **What is your long-range vision for a freshwater quality metric?**

- Tie WCs to the National wetlands classification system and with the statewide community habitat assessments
- Be sure to link to metadata and data
- TRENDS are important
- Data should be geo-referenced with a common geo-database architecture
- Link to a quantitative economic indicator
- Include lakes and reservoirs
- Use an indicator that shows whether the standard is being approached or % samples that exceed the standard
- WPWA has fish community data that needs to be analyzed (warm water fishery/cold water fishery)
- Compare warm water fish/cold water fish classification system with fish community data to tell the story
- Connect indicators because there is a lot of overlap
- Temperature data might be worth collecting – relatively easy to do and QAPP straight forward

- Report on fish passage – miles of river open.

### **What should Watershed Counts do for the freshwater metric in the short term?**

- Use Aquatic Life, not Habitat
- Provide numbers at different scales – the NB region as a whole, individual watersheds
- Try to emphasize the economic benefits of a clean environment
- Recognize that quality and quantity are linked. Make this part of the story.
- For the state house presentation, consider the audience and pick an indicator and a way of telling the story that they can relate to.
- WC will not make an ask – we encourage partner groups to use the public presentation as an opportunity for their own ask
- Email the story we create to decision makers. They may not come to the event, but might read the story.

### **Miscellaneous other recommendations for the Watershed Counts partnership**

- Choose focus areas each year
- Develop an app with interactive video
- Climate change as the story – how prepared are the towns? Towns must now include climate change adaptation in their comp plans
- Email video to legislators

Thank you to all, the script will be mailed to you all and we are looking for your input

Please feel free to contact us with any things you forgot to mention!

Draft storyline will be in outline form by March 24<sup>th</sup> and we will be working on this until April 24<sup>th</sup>.

## ATTENDEES

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