Stream Monitoring
Symposium
January 24, 2009
Never believe that a few caring people can't change the world. For, indeed, that's all who ever have.

Margaret Mead
Water is a Public Resource
Division Structure

- Water Division
  - Watershed Management
  - Drinking and Groundwater
  - Fisheries
Wisconsin “Coasts”

- Office of Great Lakes
- Mississippi River Team
Our Water Resources

- 15,000 lakes
- 84,000 miles of rivers
- 5.3 million acres of wetlands
- 1,000 miles of great lakes shoreline
- Groundwater resources – 100 feet deep
Four Goals Define Our Mission

1. Fully implement the Clean Water Act
2. Enforce the Public Trust Doctrine
3. Support and Enhance Healthy Fisheries
4. Protect Drinking and Groundwater Resources
Statewide Monitoring Strategy

- Existing DNR Data
- Citizen Monitoring data
- Data from other State and Federal Agencies
Monitoring Strategy

1. Monitoring to Achieve four Water Objectives

2. Helps bridge DNR's programs and information needs with the state's overarching Water Program objectives.
Water Monitoring Strategy

• **Strategy employs a staged approach to information gathering**
  - Tier 1 - Statewide Baseline Monitoring
  - Tier 2 - Targeted Evaluation
  - Tier 3 - Management Effectiveness and Compliance Monitoring
Citizen Volunteers are Critical Partners

“The ultimate test of a person’s conscience may be the willingness to sacrifice something today for future generations whose words of thanks will never be heard.”

Gaylord Nelson
What’s Next?

- The *Strategy* is meant to be dynamic
- Improvements are incorporated into our sampling design on an as-needed or annual basis.
- The *Strategy* also requires regular review of all monitoring efforts
Monitoring – Critical Current Issues

- Development Pressures
- Polluted Runoff (non-point pollution)
Monitoring – Emerging Concerns

- Water Quantity Concerns
- Aquatic Invasives
- Emerging Contaminants
Aquatic Invasives

- As of 2006, over 180 Aquatic Invasives have become established in the Great Lakes
1940 Housing Density

1940 Housing Density by Partial Block Group

- County Boundaries
- Water

Housing Units Per Square Mile
- Less than 5
- 5 - 10
- 10 - 20
- 20 - 40
- 40 or more

0 10 20 30 40 Miles
1990 Housing Density
2010 Housing Density (forecast)
2006 Pilot Project Results

- Designed to answer questions regarding the development and management of level 2 citizen-based stream monitoring
2006 Pilot Project Goals

1. Assess interest, willingness, and ability of citizens to monitor streams using WDNR methods
2. Evaluate viability of level 2 stream monitoring
3. Obtain data of sufficient quality to be used by WDNR
4. Define methods, QA/QC, job description, and orientation and training sessions
5. Assess time commitments of WDNR staff to assist with the program
6. Assess costs of operating the program
Report Conclusions

- Citizens were able to be trained to successfully monitor streams of Wisconsin using WDNR baseline assessment methods
  - accurately calibrated and utilized equipment,
  - accurately recorded and submitted data
  - level of interest to monitor at WDNR-recommended sites was acceptable
  - received adequate training and support from program staff
  - widespread and substantial contribution to data collection (120 sites monitored monthly)
“Amateurs built the ark, professionals built the titanic.”

Dave Barry
Challenges to Expanding Citizen Monitoring

- Safety of citizens
- Cost of analysis (materials, shipping, etc.)
- Role of Citizen Monitoring within DNR
- Time for volunteer training
- Lack of time for biologists to work with citizen groups.
- Lack of credibility of volunteer monitoring by professionals.
Challenge: Safety to Citizens

• We have other options of what to monitor besides those that include a safety hazard for citizen monitoring
  – we are leaving these types of methods out of the suite available for citizens
Challenge: Cost of Analysis

• We are working with the budgets we have.
  - Purchasing Hach kits ($50/100 tests vs. YSI DO meters ($850/each)
  - Citizens share equipment - each set of Level 2 equipment purchased used at a minimum of 3 sites.
Challenge: Lack of Standard Methods

- We're working our way through various methods one by one.
  - In 2009 will add grab sampling to the suite of parameters defined (and agreed upon by biologists) for citizens to collect and enter to our SWIMS database.
  - Develop uniform methods, we'll eventually have many methods available and can fit those into whatever model is being used by WDNR to monitor in a given year.
Challenge: Time for Training and Quality Checks

• We are growing the program in size very cautiously
  • Exploring the idea of using a Train the Trainer model,
  • Asked regions for specific time commitments
  • Marketing the overall program to DNR staff, so they understand who coordinates level 1 and that their expected role is at levels 2 and 3, not level 1.
Challenge: Biologist Time

- Asked for specific time commitments by staff/regions for 2009
  - and asked staff to report to us if they are approached by more citizens groups than they are able to assist within that time period
Challenge: Credibility

- Lack of credibility of volunteer data:
  - Level 1 (WAV) methods - undertaking several small scale studies to evaluate the methods used by volunteers so we can adapt them to be most reliable as compared to professional methods.
  - Level 2 - citizens use the same methods as WDNR staff, and are checked annually in their methodology.
  - A Quality Assurance Project Plan is being developed and expected to be completed by summer 2009.
Eighty percent of life is showing up.

Woody Allen
“If there is magic on this planet, it is contained in water.”

Loran Eisely