Indicator Integration for National Water Quality Information: A State Perspective

Leslie J. McGeorge, Administrator
NJDEP - Water Monitoring & Standards

• Value of Indicators - Translating Data to Information
• Indicators Reporting – State and National
• National/State/Watershed Scale Data Integration
• Comparability of Data
• Align Indicators with Water Goals – measures of progress
• Benefits of Indicators in Results-Based Management Systems

National Water Monitoring Conference – April 2010
Value of Environmental Indicators

• Indicators - currency of environmental quality information exchange

• Measures of environmental quality used to assess status and trends of environmental pressures, conditions or effects

• Translate raw monitoring data, through assessment, into meaningful information

• Investments needed in data assessment, analysis & statistical methods
Indicators – Data to Information: Biological Monitoring Example

AMNET Statewide Results - Round 3 2002-2007 (758 total sites)

- Aquatic Life Use Attainment – Impaired, Non-Impaired
  - Excellent
  - Good
  - Fair
  - Poor

Figure 6

Biological Ratings – Excellent, Good, Fair, Poor
Comparable across Ecoregions

Multi-Metric Index Scores – Ecoregion specific

Individual Scores (e.g., %EPT)

Benthic macro-invertebrate taxa counts (e.g., mayfly & stonefly counts)

Usefulness to Resource Managers & Public

NJDEP Water Monitoring and Standards
Environmental Indicator Reporting

NJ State

**Strategic Water Goal** – Rivers, lakes & coastal waters will be fishable, swimmable & support healthy ecosystems...Adequate quantities of surface & ground water will be available for all uses

• 2000 – NJ SOE Report

• 2005 to present – NJ Electronic Environmental Trends Chapters

  **Water Chapters** (including):
  - Coastal Beach Closings
  - Shellfish Growing Waters
  - Rivers & Streams - Benthic Macroinvertebrates/ Fish
  - Rivers & Streams – Pollutant trends
  - All Waters - Designated Use Support

http://www.state.nj.us/dep/dsr/trends2005/
Environmental Indicator Reporting

National

- 2003 EPA Draft Report on Environment (RoE)
- 2008 EPA RoE Report – electronic chapters

Other National Environmental Indicators efforts include:

- Heinz Center Report NEST (under development)- multi-Agency
NJ Water Indicator Examples

Federal Clean Water Act – states adopt water quality standards & biennially assess extent to which waters provide for protection of fish & shellfish, allow recreation, & meet other uses. State monitoring aligned with state standards for assessment. States in unique position for reporting this indicator.
New Jersey has 700 lifeguarded ocean and bay beaches - more than any other state in the country.

173 total beach closings in 2009 (6 for bacteria in excess of standard, 135 precautionary)

99.7% of beach days open and available to public in 2009

73,500 total beach days available in 2009
*87.6% of floatable closings caused by 2008 criminal medical waste dumping event.
**60.5% of precautionary closings due to 2002 Monmouth Co. Health Dept. Wreck Pond rainfall policy. As of 2009, 4 beaches close for 24 hours following .1 inches of rainfall. This beach closure policy is more protective of public health; no waiting for sample results from lab.
### NEW JERSEY
Regional Hydrologic Indicators & Declared Drought Status

#### June 24, 2009

<table>
<thead>
<tr>
<th>Region</th>
<th>Indicator Status</th>
<th>Hydrologic Indicator</th>
<th>Location</th>
<th>Drought Status</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>90-day precipitation</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>90-day stream flow</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>NJ reservoirs</td>
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<td>Del. R. reservoirs</td>
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<td>Unconf ground water</td>
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</tr>
</tbody>
</table>

**Northeast**
- Near or above normal
- Moderately dry
- Severely dry
- Extremely dry

**Central**
- Near or above normal
- Moderately dry
- Severely dry
- Extremely dry

**Southwest**
- Near or above normal
- Moderately dry
- Severely dry
- Extremely dry

**Coastal North**
- Near or above normal
- Moderately dry
- Severely dry
- Extremely dry

**Coastal South**
- Near or above normal
- Moderately dry
- Severely dry
- Extremely dry

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**NJ Strategic Goal**
- Adequate water quantities will be available for all needed uses

**Hydrologic Indicators**
- Precipitation
- Stream Flow
- Reservoir Levels
- Ground water Levels

**Broken down into 6 regions**

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**New Jersey Department of Environmental Protection**
Mark N. Mauriello, Commissioner

**For more information:**
www.njdep.org

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**NJDEP Water Monitoring and Standards**
Data Integration

• Comparability of Data

  Some data currently comparable, some need to evaluate and enhance comparability

• Scale roll-up (Local-State-National)

• Benthic Data Example
NJ’s Ambient Biomonitoring Network & EPA National Rivers & Streams Assessment (NRSA) Survey Sampling Sites

- NJ’s ambient biomonitoring – EPA RBP methods w/ 800 benthic sites
- NRSA – 15 sites in NJ
- Need to integrate wealth of state data with national
- Continue to address comparability (WSA study)

Multi-Metric Indices

**HGMI** - High Gradient

**CPMI** - Coastal Plain

**PMI** - Pinelands
Benthic Data Roll-up – Site (Volunteer and DEP), HUC 14, HUC 12, State

- Volunteer site data used to supplement state site data
- NJ assessments done by HUC14 (multiple HUC 14s within ea HUC12)
- Performance Measures reporting to EPA - HUC 12 scale
- State and Watershed information can roll up to meet federal needs
RESULTS-BASED MANAGEMENT SYSTEM

• Society
• Environment
• Economy

DEP Mission

DEP Strategic Plan

NEPPS* Performance Partnership Agreement
Goals and Indicators

Program Work Plans/Budget

* NEPPS = National Environmental Performance Partnership System
Example Use of Goal and Indicators in Results-based Management System

Shellfish waters goal in 2000: By 2005, 90% of waters should be harvestable

Source: NJDEP, Water Monitoring & Standards, Bureau of Marine Water Monitoring

NJDEP Water Monitoring and Standards
### Classification Upgrades Needed to Achieve 90% Goal - Harvestable Shellfish Waters by 2005

<table>
<thead>
<tr>
<th>Location</th>
<th>% Harvest</th>
<th>Success Probability</th>
<th>Action</th>
<th>Est. Time (Yrs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sandy Hook</td>
<td>88.2%</td>
<td>High</td>
<td>More intensive sampling for classifications</td>
<td>2</td>
</tr>
<tr>
<td>OCUA - North</td>
<td>88.5%</td>
<td>High</td>
<td>ID new landmarks for closure</td>
<td>1</td>
</tr>
<tr>
<td>Long Branch – Atlantic Ocean</td>
<td>88.8%</td>
<td>High</td>
<td>Installation/upgrade of WWTP alarms</td>
<td>4</td>
</tr>
<tr>
<td>Flynns Knoll</td>
<td>88.9%</td>
<td>High</td>
<td>Toxic testing of shellfish</td>
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</tr>
<tr>
<td>Toms River</td>
<td>89.9%</td>
<td>High</td>
<td>Shoreline Survey</td>
<td>1</td>
</tr>
<tr>
<td>Sea Isle City</td>
<td>89.9%</td>
<td>High</td>
<td>NPS Source ID &amp; Correction</td>
<td>3</td>
</tr>
<tr>
<td>Sandy Hook</td>
<td>90.5%</td>
<td>Moderate</td>
<td>More intensive sampling for classifications</td>
<td>2</td>
</tr>
</tbody>
</table>

90% goal achieved
Recommendations for National Water Indicators

- Indicators –key to water quality information
- NWQMC & states/ state organizations like ASIWPCA – play active role in national indicators development
- Rely on multiple data sources – national surveys/networks (e.g. EPA NARS, USGS stream gaging network) AND state data, including state intensification of NARS
- Use wealth of available state data, e.g. use assessments, % beach days open, shellfish harvestable waters, biological assessments
- Emphasize comparability studies – e.g. complete WSA - State benthic methods comparison
- Additional investments needed in assessment methods, e.g. trends analyses
- Link indicators to strategic goals in CWA and GPRA –required agency Strategic Plans. Consider coordination Water Goals and Indicators across federal agencies.