

# Assessing the Nation's Waters: Accomplishments of the First Ten Years of the National Aquatic Resource Surveys (NARS) and Challenges for the Next Ten

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# Water Quality Monitoring, Data and Information: Looking back – Where Were We in 2004?

## Critiques

- GAO
- NRC
- NAPA
- Heinz Center
- EPA's Enviro. Report



Limited Assessments



Lack of comparability and consistency



No national picture of water quality

## Assessments of all U.S. waters\*

- 564,000 rivers/stream miles (19%)
- 16 million lakes/reservoirs acres (39%)
- 25,000 bay/estuary square miles (29%)
- 1.8 million wetland acres (2%)

\* ATTAINS, Assessed Waters for 2004

# Strategy to incorporate Multiple Monitoring Tools

- Predictive tools
- **Statistical Survey Designs**
- Targeted monitoring designs
- Innovative approaches

...to support full range of decision objectives for all water body types at multiple scales.

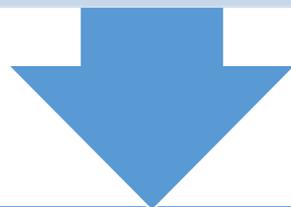
# Implementing a new approach for filling the information gap

Environmental Monitoring and Assessment Program initiated in 1989 by EPA's ORD: Develop/Demonstrate tools to monitor:

Status

Trends

Relative importance of stressors



Technical foundation for current efforts to monitor aquatic systems under the National Aquatic Resource Surveys

# National Aquatic Resource Surveys – A Partnership between EPA, States and Tribes



*Coastal*

*Streams and Rivers*

*Wetlands*

*Lakes*

1. Assess biological and recreational condition and changes over time of the nation's waters using indicators of condition and stress
2. Rank stressors based on the relative associations between indicators of condition and indicators of stress
3. Build/enhance state and tribal monitoring and assessment capacity

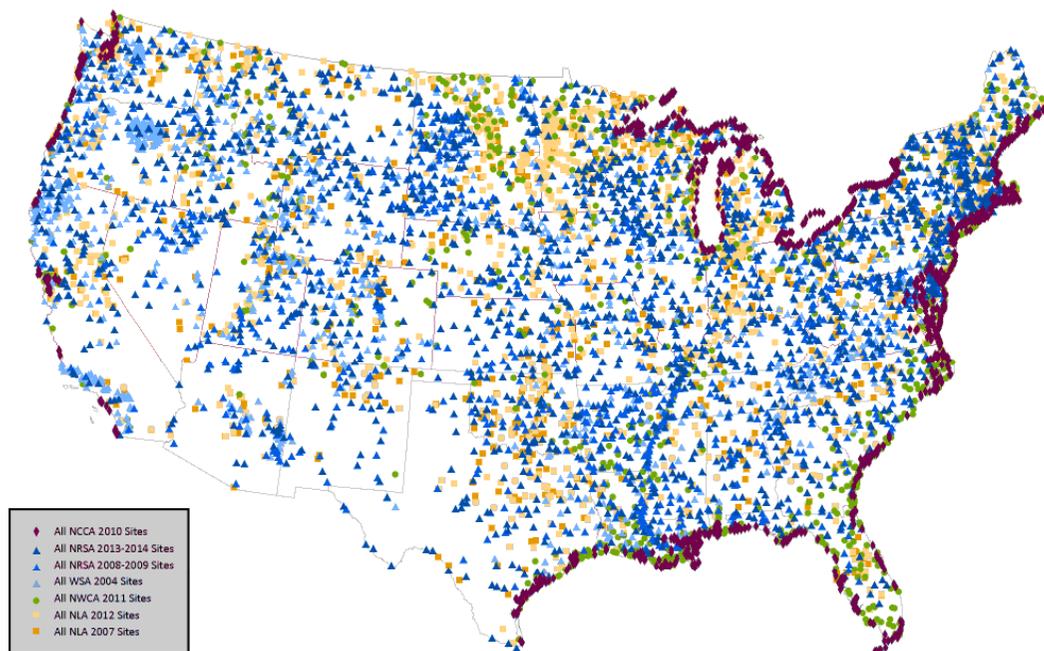
# National Consistency: NARS Approach



- Randomized design to report on condition of each resource nationally and regionally
  - 1,000 sites in lower 48
- Standard field and lab protocols
- National QA and data management
- Nationally consistent and regionally relevant data interpretation and peer-reviewed reports

# 2014: Where we are today

Sites Sampled as part of the National Aquatic Resource Surveys



**2014: More than 10,000 sites sampled**

First ever, nationally consistent assessments of coastal waters, lakes and reservoirs, rivers and streams, and coming soon wetlands.

Assessments address ecological and human-health indicators; stressors; and changes over time

Expanded and strengthened partnerships

2014: Comprehensive,  
consistent, and  
statistically-valid  
assessments

**How much  
surface water  
have we assessed  
in the continental  
United States?**



Coastal:  
>35,000 square  
miles



Lakes: >50,000  
lakes (20  
million acres)  
(with more  
coming)



Rivers/streams:  
>1.9 million  
miles



Wetlands:  
Extent estimate  
coming soon

# 2014: What are we finding – a few examples

## Biological Condition

55% of rivers/streams have poor biological communities.

22% of lakes have poor biological communities.

27% of coastal waters are rated poor for benthic condition.

## Stressors

In rivers, streams, lakes: the most widespread stressors were poor habitat and excess nutrients.

## Human Health

Microcystins were detected in 1/3 of lakes and at were at levels of concern in 1%.

Enterococci was found at levels exceeding a human health threshold in 4% of lakes and 23% of rivers/streams.

Evaluating nutrients in key areas (e.g., Mississippi River Basin)

## Applying Results

Lake shoreline protection/restoration campaign

Background/baseline data for some oil related constituents in Gulf of Mexico

# Partnerships are critical for implementation and improvement: States/Tribes

- States conducting surveys increased from 21 in 2004 to 50 in 2014

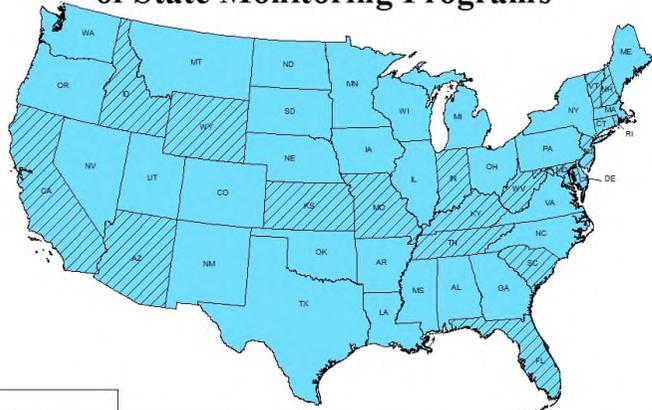
- States are using data to:

- Evaluate and incorporate new field and analytical methods
- Leverage field efforts to evaluate emerging contaminants, pesticides and other indicators
- Assess statewide condition and changes over time

- States are Taking Action:

- Use lakeshore habitat data to inform decision-makers of water quality issues including comparisons with state/regional conditions;
- Apply relative and attributable risk to pose questions for water quality management scenarios

Use of Probability Surveys as a Component of State Monitoring Programs



Status of State Use and Reporting of Probability Surveys

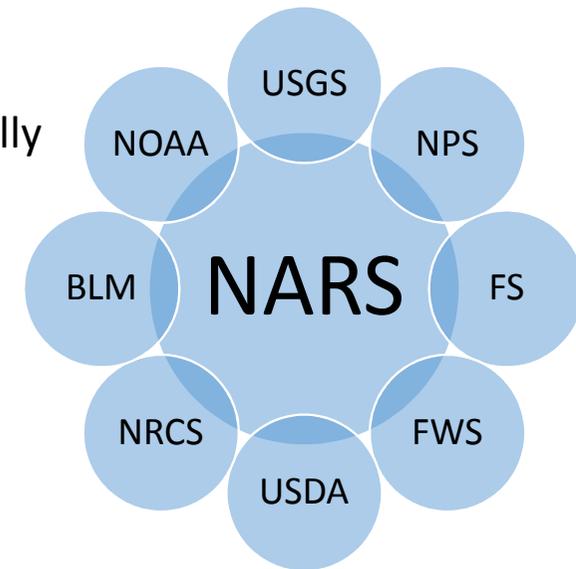
Reported to EPA (16)  
Adopted state scale survey (50\*)

\*Alaska is implementing a state scale survey regionally

August 26, 2013

# Partnerships are critical for implementation and improvement: **Other Agencies/External Partners**

- We have been Increasing efforts with federal partners to leverage resources and improve water quality assessments
- Use of the data
  - Assess status of waters on federal land and compare nationally/regionally
- Extensive datasets for continued research and discovery
  - Scientists
  - Academics
  - Others
- Opportunity -- NARS Campus Research Challenge  
<http://water.epa.gov/type/watersheds/monitoring/nars-challenge.cfm>
  - Proposals due May 15



# Where are we headed in next 10 years?

Continue to deliver and improve nationally consistent and statistically-valid water quality information for:

All surface  
waterbody types

Water  
management  
efforts at multiple  
scales

Expanded research  
and analysis  
opportunities

# Opportunities and Challenges

- Opportunities

- Change and trend analyses
- Increase transfer of tools to states/tribes and others
- Enhance data assessment and furthering research
- Focus on continued collaboration and strengthening partnerships

- Challenges

- Changes to methods, analyses -- impacts on consistency of the surveys
- Transparency and documentation
- Resources – funding and people
  - Implementing the core survey while working to expand analyses and increase/improve work with partners.
  - Desire to add indicators and scope of the surveys

# Where to find Data

- Wadeable Streams Assessment
  - [http://water.epa.gov/type/rsl/monitoring/streamsurvey/web\\_data.cfm](http://water.epa.gov/type/rsl/monitoring/streamsurvey/web_data.cfm)
- National Rivers and Streams Assessment 2008-09 (Draft)
  - <http://water.epa.gov/type/rsl/monitoring/riverssurvey/>
- National Lakes Assessment 2007 (2012 not yet available)
  - [http://water.epa.gov/type/lakes/NLA\\_data.cfm](http://water.epa.gov/type/lakes/NLA_data.cfm)
- National Wetland Condition Assessment 2011 (data not yet available)
- National Coastal Assessment (past surveys)
  - <http://www.epa.gov/emap/nca/html/data/index.html>

# Thanks to many people for making this ten (plus) years, possible

- States
- Tribes
- EPA
  - NARS HQs team
  - ORD
  - Regions
- Federal agencies
- And many, many others .....

