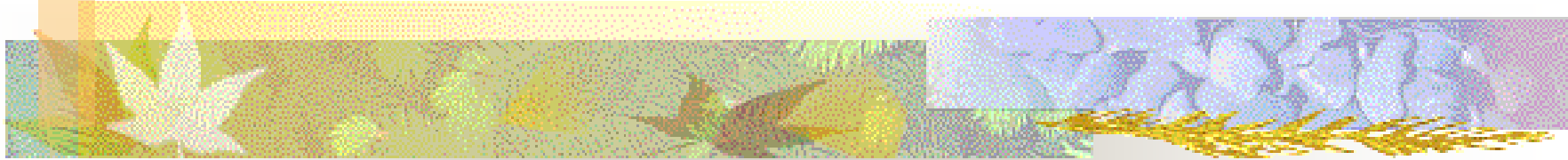


# Elements of a State Water Monitoring and Assessment Program



303(d) Vision Meeting  
April 2015



# National Monitoring and Assessment Vision\*

- Integrated monitoring programs that support decision making—
  - Meet CWA/SDWA/State objectives
  - Generate data that are accessible and of documented quality
  - Use strategic combination of monitoring designs and assessment tools
  - Coordinate among monitoring partners

\* Circa 2002



# Tools to Implement the Approach

- Monitoring Consortium Guidance
- Elements of a State Monitoring and Assessment Program Guidance
- EMAP and Monitoring Design Guidance
- Consolidated Assessment and Listing Methodology (CALM)
- STORET, ADB, WATERS and other tools
- Quality Assurance Guidance (series)
- 2002 Integrated Reporting Guidance
- Landscape and water quality models
- National Monitoring Initiative



# Elements of a State Water Monitoring and Assessment Program

- Monitoring Program Strategy
- Monitoring Objectives
- Monitoring Design
- Core Indicators of Water Quality
- Quality Assurance and Implementation
- Data Management and Access
- Data Analysis/Assessment (CALM)
- Reporting
- Programmatic Evaluation
- General Support and Infrastructure

# Monitoring Program Strategy

- A comprehensive monitoring program strategy addressing:
  - All state waters and all waterbody types
  - Monitoring objectives
- Description of how the State will address the remaining elements, resources permitting
- Timeline for incremental progress
- Annual milestones in 106 grant/PPA

# Monitoring Objectives

- An adequate program must be designed to address Clean Water Act objectives, e.g.
  - Determination of water quality status and trends (305(b))
  - Identification of impaired waters (303(d))
  - Identification of causes and sources of problems (305(b), 303(d), SDWA Sourcewater Assessment)
  - Implementation of water management programs (314, 319, 303(d) TMDLs, permitting, 402 etc.)
  - Evaluation of program effectiveness
- States may have additional objectives to meet



# Monitoring Design

- Cost effective support of monitoring objectives / decision needs, e.g. combination of:
- Statistical (probability) survey to assess broad population of water resources
  - Unbiased, representative condition estimates
  - Track changes over time, program wide effectiveness
  - Provide context around targeted, site-specific results
- Targeted/intensified to fill information gaps, describe site-specific conditions
  - Targeted site selection or finer-scale probability
  - Intensified frequency of sampling to address temporal variation
  - Refine cause and source allocation
  - Long term change at project sites

# Core and Supplemental Indicators

- Core indicators appropriate for assessing attainment with applicable uses
  - Aquatic life
  - Recreation
  - Public water supply
  - Fish and shellfish consumption
- Supplemental indicators
  - Specific to watershed and potential sources
  - Selected to follow up on biological impairment



# Quality Assurance and Implementation

- Quality Management Plans/QAPPs, SOPs, etc that address:
  - Monitoring objectives linked to decisions
  - Indicators linked to objectives
  - Uncertainty associated with conclusions
  - Sample design to yield representative conclusions
  - Quality control in field and lab
- Collect and process samples following QAPPs, SOPs, etc.

# Data Management and Accessibility

- WQX/STORET and Water Data Portal
  - Raw monitoring results
  - Metadata about sample collection, analysis and monitoring design
- Assessment Database / ATTAINS redesign
  - Attainment status for assessed waters and uses
    - Targeted, assessment units and priority areas
    - State statistical surveys
  - Impaired categories support 303(d) listing
  - Tracking TMDLs, alternatives, etc.
- Geospatial data –
  - NHDPlus
  - Catchment approach

# Data Analysis/Assessment (CALM)

- Describe procedures for interpreting numeric criteria, narrative criteria, designated uses
- Describe data quality and documentation needs, recognizing severe problems may be documented with rudimentary tools
- Describe analytical approaches for interpreting data and information to distinguish attainment from impairment

# Consolidated Reporting

- 305(b) Water Quality Inventory (incl. 314)
- 303(d) List of Waters Needing TMDLs
- 205(j) Water Quality Problems
- 106(e) Monitoring Data
- 319
- SDWA
- Others

# Programmatic Evaluation

- Describe how needs of decision-makers/data users are met
  - State wide assessment of all waters
  - TMDL calculation
  - WQS development/revision
  - NPDES permit limits
- Describe how changes are made to improve programs
- Evaluate program implementation



# General Support and Infrastructure

- Staff and Training
- Laboratory Resources
- Sampling Resources
- Data Management Resources
- Data Analysis and Reporting Resources
- Auditing, Planning and Evaluation Resources



# Applications for 303(d) Vision

- How do/can monitoring colleagues participate in priority setting?
  - Accessing available data and information
  - Identify implications of priority options on data gaps and monitoring activities
  - Defining monitoring objectives and approach to support vision priorities
  - Quantifying resource needs/gaps for monitoring specific to 303(d) vision