

A Framework for Monitoring

March 26, 2003





Mission:

Provide a national forum to coordinate consistent and scientifically defensible methods and strategies for improving water quality monitoring, assessment, and reporting.

NWQMC Members

💧 Federal Agencies

- US Environmental Protection Agency
- US Geological Survey
- Natural Resources Conservation Service
- US Forest Service
- US Fish & Wildlife Service
- National Park Service
- Tennessee Valley Authority
- National Ocean Service
- US Navy

💧 States and Tribal

- NH Department of Environmental Services
- NJ Department of Environmental Protection
- VA Department of Environmental Quality
- AL Department of Environmental Management
- MN Pollution Control Agency
- TX Natural Resources Conservation Commission
- WA Department of Ecology
- Inter-Tribal Council of AZ

NWQMC Members

💧 Other Interests

- Water Environment Federation
- American Water Works Association
- Association of Metropolitan Water Agencies
- Association of Metropolitan Sewerage Agencies
- North American Lake Management Society
- Association of American State Geologists

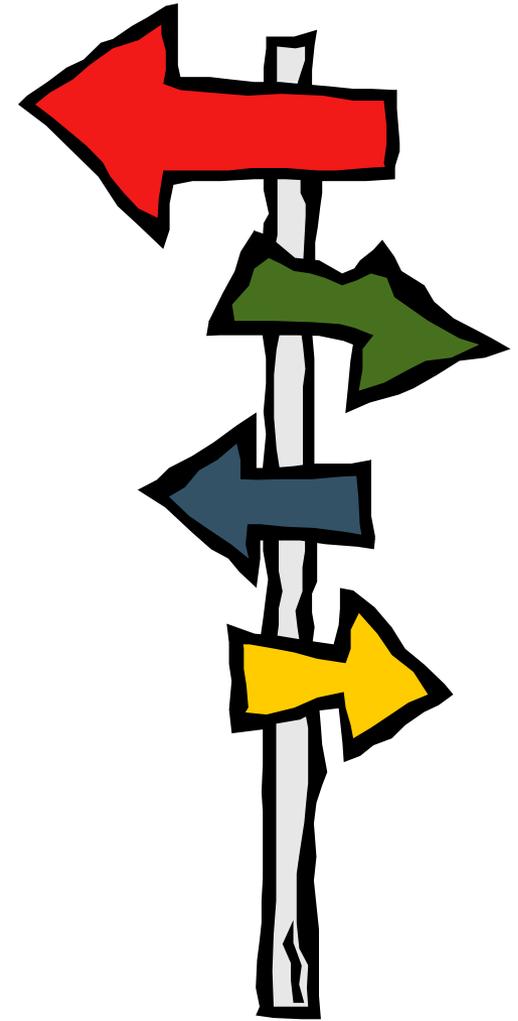
💧 Other Interests

- Colorado State University, Water Resources Research Institute
- University of Rhode Island, Watershed Watch
- Ohio River Valley Water Sanitation Commission
- National Association of State Conservation Agencies
- American Chemistry Council

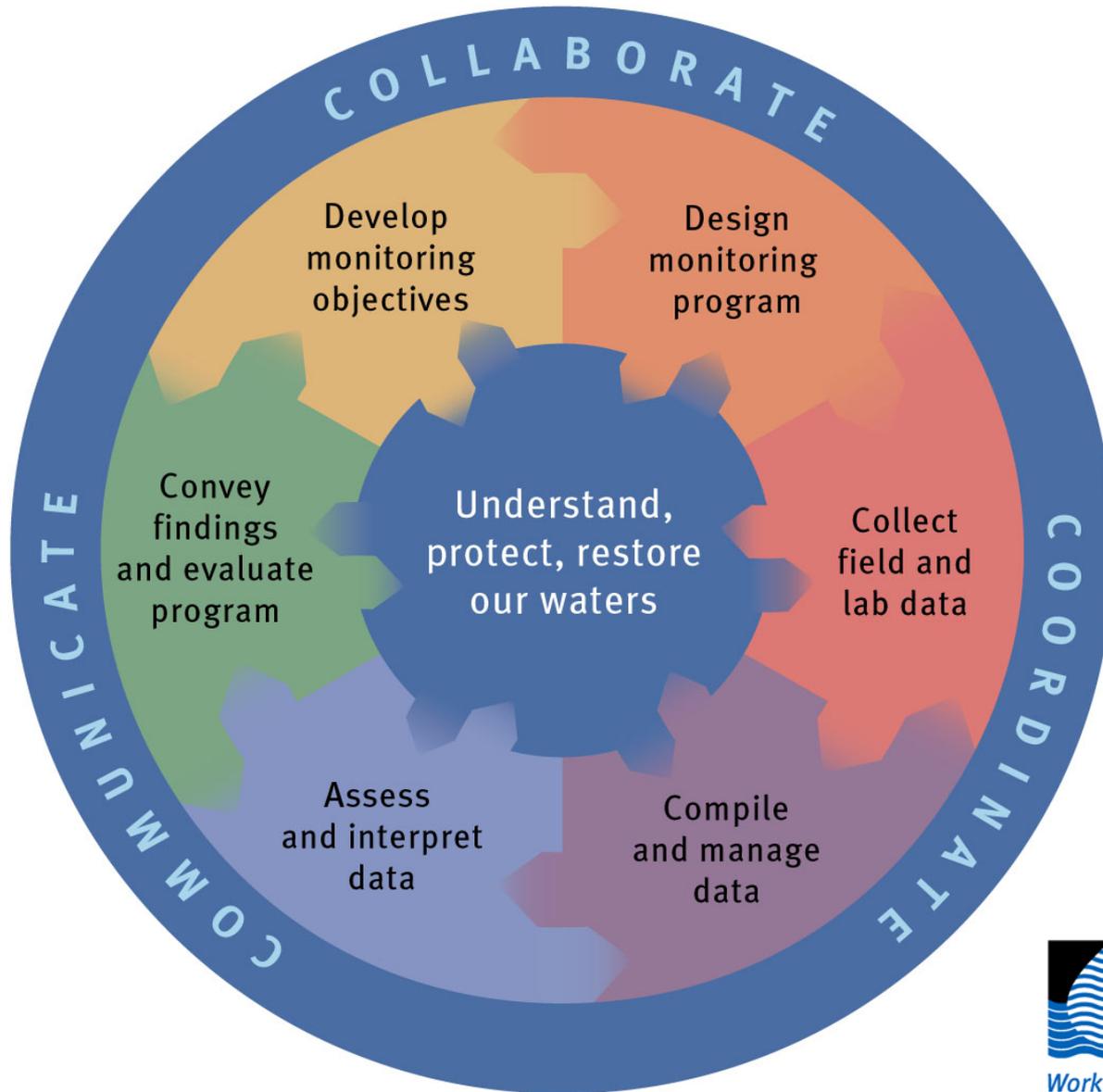
Why do we monitor?

- 💧 Describe status and trends
- 💧 Describe and rank existing and emerging problems
- 💧 Design and evaluate management and regulatory programs
- 💧 Respond to emergencies
- 💧 Protect our water supplies

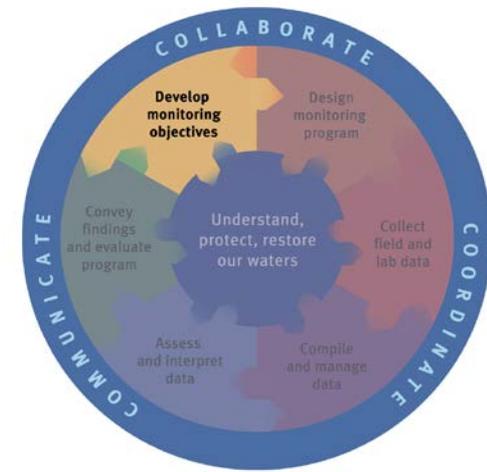
*From the Final Report of the
Intergovernmental Task Force on
Monitoring (1995)*



National Monitoring Framework



Develop Monitoring Objectives

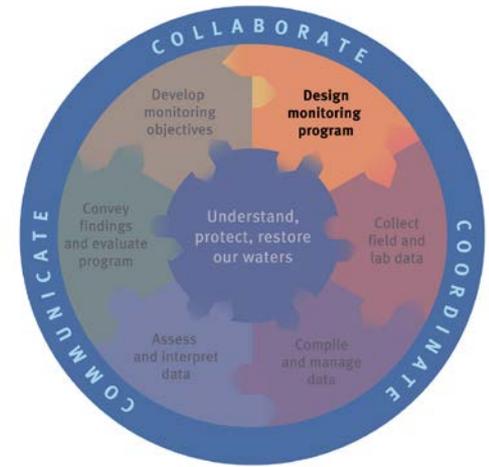


- 💧 Why monitor?
- 💧 Who will use the data?
- 💧 What will the data be used for?



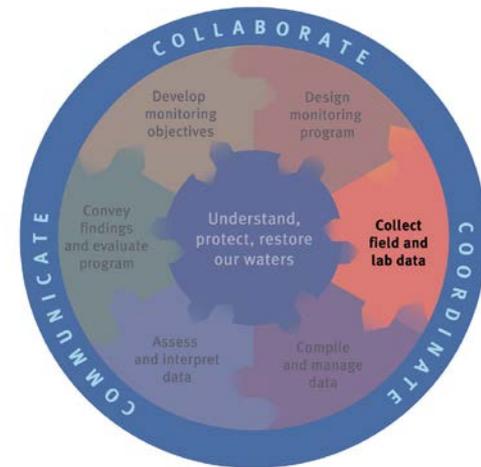


Design Monitoring Program



- 💧 **Environmental setting**
- 💧 **Water quality issues**
- 💧 **Sampling network design**
 - **Site selection, what to monitor**
 - **How often, for how long**
- 💧 **Methods**

Collect Field and Lab Data



- 💧 **Identify optimal methods**
 - **National Environmental Methods Index (NEMI)**
- 💧 **Train personnel**
- 💧 **Document sampling site location**
- 💧 **Coordinate with partners**



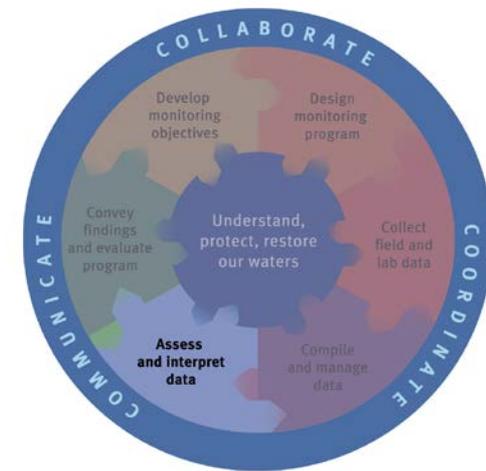
Compile and Manage Data



- 💧 **Database design / Security features**
- 💧 **Store field and lab data**
- 💧 **Meta data documentation**
 - **Water Quality Data Elements (WQDE)**
- 💧 **Data Verification**

Assess and Interpret Data

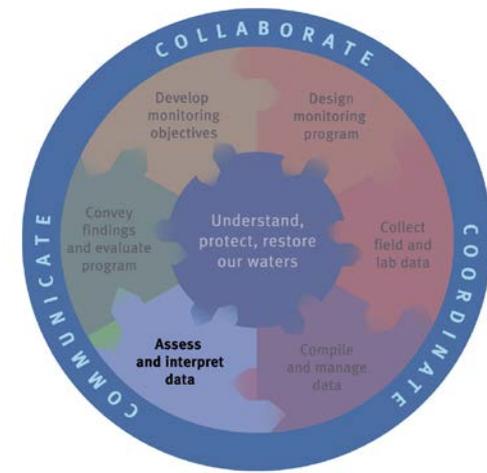
What Does It Say?



- 💧 **Summary statistics**
- 💧 **Compare to state standards**
- 💧 **Time series plots**
- 💧 **GIS**
- 💧 **Water quality models**

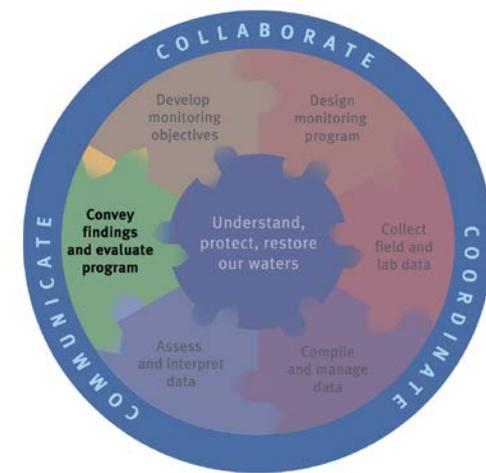
Assess and Interpret Data

What Are the Implications?



- 💧 **Historical evaluation**
- 💧 **Water quality relevance**
- 💧 **Management relevance**
- 💧 **Information goals met?**

Convey Findings & Evaluate Program



- 💧 **Data summaries**
- 💧 **Professional publications, fact sheets, web pages**
- 💧 **News releases**
- 💧 **Interested party review**

Convey Findings & Evaluate Program

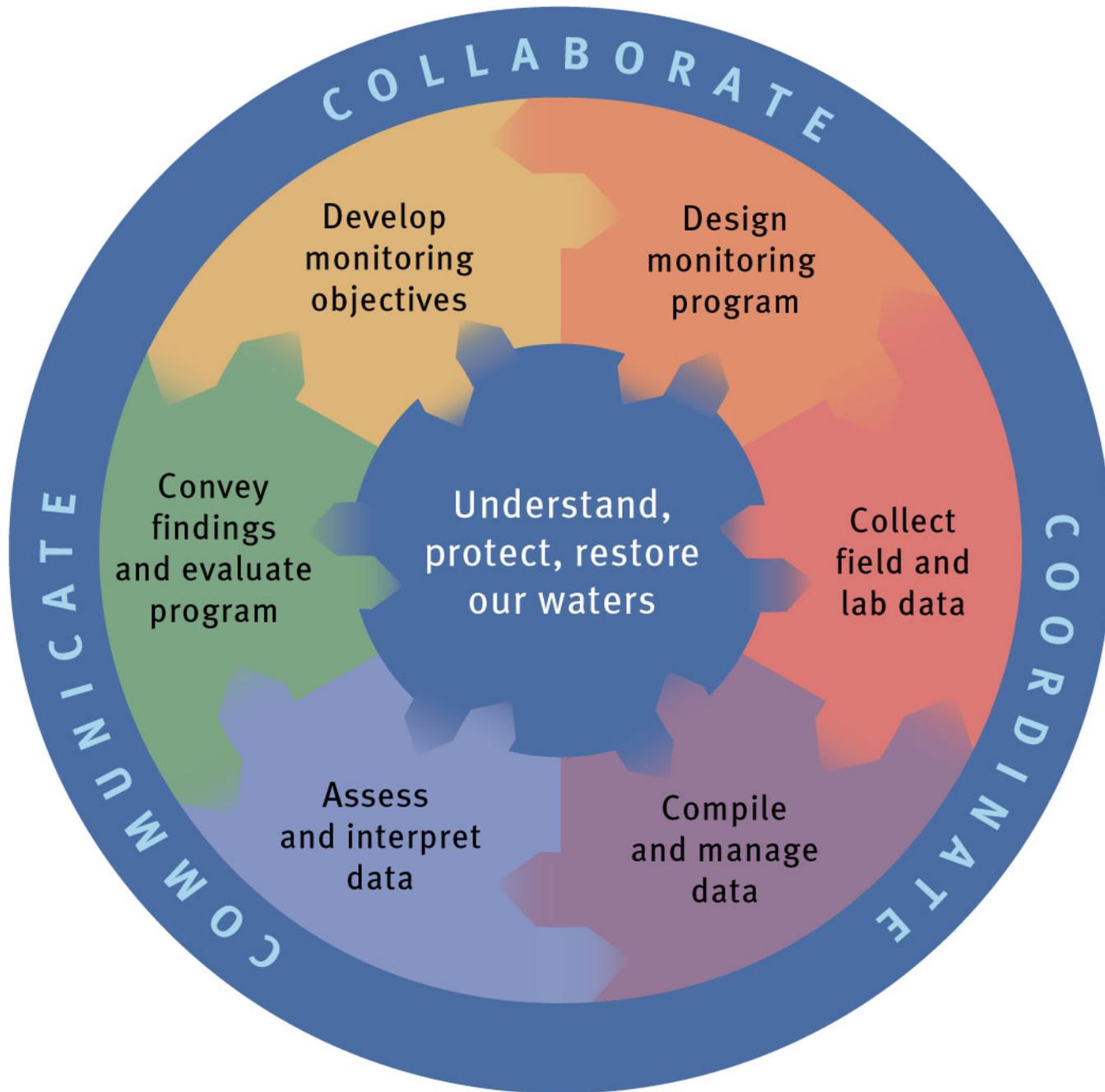


- 💧 **Did we meet our objectives?**
- 💧 **Evaluate cost**
- 💧 **Feedback from information users**
- 💧 **“Lessons Learned”**
- 💧 **Adjustments? Redesign?**

Collaborate, Communicate, & Coordinate



- 💧 **Public participation**
- 💧 **National and regional monitoring conferences**
- 💧 **State and regional monitoring councils**



Additional Information

NWQMC: <http://water.usgs.gov/wicp/acwi/monitoring/>

NEMI: www.nemi.gov

WQDE:

<http://wi.water.usgs.gov/pmethods/elements/elements.html>