USGS
science for a changing world

Missouri River Monitoring—What Is Proposed

Pam Haverland
Columbia Environmental Research Center

U.S. Department of the Interior
U.S. Geological Survey

- What is Adaptive Management?
- Monitoring and Adaptive Management
- Current Monitoring
- Why Do We Need A Monitoring Program?
- What is Proposed?
  - MoREAP, Bereuter bill (HR3570), NAS report
- Common Themes

USGS

What Is Adaptive Management

"Adaptive management is an overall strategy for dealing with change and scientific uncertainty… [it] promotes an environment for testing hypotheses and exploring promising changes based on sound scientific data and analyses."

Summary Missouri River Revised Draft Environmental Impact Statement
Master Water Control Manual, August 2001, p 9.

USGS

Monitoring and Adaptive Management

"Adaptive management depends greatly upon environmental research and monitoring to evaluate the impacts of management actions."

The Missouri River Ecosystem: Exploring the Prospects for Recovery
National Research Council, January 2002, Prepublication Copy, p. 90

USGS

Current Monitoring Activities

- USGS stream gages
- NE Game & Parks at Hamburg Bend
- MO Department of Conservation catfish
- Power plants, water intakes, waste treatment
- Platte River
- Benthic fish
- Ft. Peck pallid sturgeon
- Tern and plover nesting
- EMAP in the Garrison Reach
- Etc.

USGS

Why Do We Need A Monitoring Program?

- Consistency
- Address specific questions
- Comparison of sites or reaches
- Comparison over time
- System view
- Integration of information

USGS

What Is Proposed?

- Missouri River Environmental Assessment Program (MoREAP)
- Congressman Douglas Bereuter's bill HR3570
- National Academy of Science's Report

  The Missouri River Ecosystem: Exploring the Prospects for Recovery
  National Research Council, January 2002, Prepublication Copy, p. 90

USGS

Missouri River Environmental Assessment Program

- 1996-1997
- USGS state partnership with MRNRC
- Goal—Provide the scientific basis for balanced management of the Missouri River's main stem and floodplain fish and wildlife resources while avoiding or minimizing conflicts with other river uses.

USGS

Missouri River Environmental Assessment Program

- Objectives
  - Species, community, habitat, and water quality response to different flow regimes
  - Biological response to structure addition, modification, or removal
  - Impact of physical changes due to sedimentation in reservoir upper reaches and incision below the dams on biota and habitat

USGS

Missouri River Environmental Assessment Program

- Two Components:
  - Long-term Monitoring
    - Consistent sampling methods to establish a system-wide database and define baseline conditions
  - Focused Investigations
    - Integrate with monitoring, predict cause-effect relationships

USGS

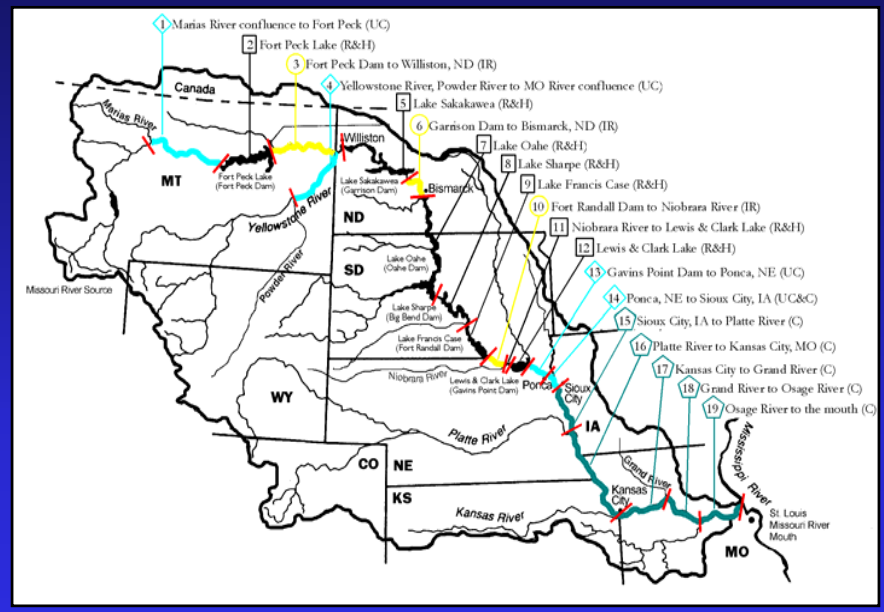
Missouri River Environmental Assessment Program

- Long-term Monitoring
  - Partnership between federal, state, and other organizations
  - Components
    - Fish and wildlife
    - Habitat
    - Water quality
  - Sampling strategy
    - Scale

USGS

Missouri River Environmental Assessment Program

- Long-term Monitoring
  - Sampling strategy
    - Four categories
      - Unchannelized
      - Reservoirs & headwaters
      - Inter-reservoir
      - Channelized



USGS

Missouri River Environmental Assessment Program

- Long-term Monitoring
  - Categories
    - Segments
      - Representative reach
        - –Crossover/bend and macrohabitats

USGS

Missouri River Environmental Assessment Program

- Focused Investigations
  - Competitive process
  - Prioritized list of information needs
  - Open to federal, state, and local agencies, for-profit and not for-profit organizations, tribes

USGS

Missouri River Environmental Assessment Program

- 15 years/renewable
- Annual coordination between MRNRC and MRBA to review progress, discuss work plan, and refine the program
- Evaluate every 5 years
- Independent scientific review committee provides program guidance
- 5 field stations and central support
- All data available

USGS

HR 3570 Lewis and Clark Voyage of Scientific Discovery Act

- Congressman Douglas Bereuter, NE
- December 20, 2001
- To direct the Secretary of the Interior to monitor the health of the MO River; and measure biological, chemical, and physical responses to changes in river management and other significant variables.

USGS

HR 3570 Lewis and Clark Voyage of Scientific Discovery Act

- Long-term Monitoring Program
  - Establishment
  - Development
  - Activities
  - Baseline
  - Database
  - Report
  - Indian tribes
  - Authorization of appropriations

USGS

HR 3570 Lewis and Clark Voyage of Scientific Discovery Act

- Long-term Monitoring Program
  - Establishment
    - To determine an monitor the biological and chemical characteristics
    - To determine and monitor the interrelationship of those characteristics with the hydrology and geomorphology
    - To monitor and assess the biota, including threatened and endangered species, habitats, and water quality

USGS

HR 3570 Lewis and Clark Voyage of Scientific Discovery Act

- Long-term Monitoring Program
  - Development
    - Secretary of the Interior and USGS Director
    - Governors of affected states
      - MRNRC
      - MRBA
    - Secretary of Agriculture
    - Secretary of the Army
    - Western Area Power Administration
    - Administrator of the USEPA
    - Missouri River Basin Tribes

USGS

HR 3570 Lewis and Clark Voyage of Scientific Discovery Act

- Long-term Monitoring Program
  - Activities
    - Provide scientific information to
      - Guide operation and management
      - Measure and model the impact of management alternatives
        - Monitoring biota, including threatened or endangered species, habitats, and water quality
        - Focused investigations of cause and effect relationships
        - Identification and evaluation of methods to conserve fish and wildlife, including T&E species

USGS

HR 3570 Lewis and Clark Voyage of Scientific Discovery Act

- Long-term Monitoring Program
  - Baseline
    - Establish a baseline of conditions against which future activities can be measured

USGS

HR 3570 Lewis and Clark Voyage of Scientific Discovery Act

- Long-term Monitoring Program
  - Database
    - Establish a database on biota, including T&E species, habitats, and water quality
    - Make the database readily available to the public

USGS

HR 3570 Lewis and Clark Voyage of Scientific Discovery Act

- Long-term Monitoring Program
  - Report
    - Every three years
      - Review the program
      - Establish and revise the objectives of the program, as necessary
      - Submit to Congress a report on the environmental health

USGS

HR 3570 Lewis and Clark Voyage of Scientific Discovery Act

- Long-term Monitoring Program
  - Indian Tribes
    - Contracts with Tribes whose Reservations are located along the MO River and have an interest in environmental restoration
    - Tasks shall implement the goals set forth and shall complement activities undertaken by the Secretary of the Interior and affected state governments
    - Notwithstanding any other provision of law

USGS

HR 3570 Lewis and Clark Voyage of Scientific Discovery Act

- Long-term Monitoring Program
  - Authorization of appropriations
    - General (Secretary of the Interior)
      - $6.5M FY 2002
      - $8.5M FY 2003
      - $15.1M FY2004-2016

USGS

National Academy of Sciences

- Adaptive Management
  - Clear goals and desired outcomes
  - Experiments and activities involve broad spectrum of river stakeholders in collaborative process to establish goals and guidelines
  - Scientific peer-review
  - Depends upon environmental research and monitoring to evaluate the impacts of management actions

USGS

National Academy of Sciences

- Monitoring
  - Flexibility
  - Coupled to adaptive management experiment and river management
  - Science and monitoring should not be ends in themselves—linked to management decisions and policy changes
  - To help evaluate the impacts of adaptive management actions, restoration projects and programs

USGS

Common Themes

- Need to measure response to changes in river management
- Partnership
- Scientific review
- Program review
- Monitoring and focused investigations
- Modify the program as necessary
- Data available

USGS

For Missouri River Information

- http://infolink.cr.usgs.gov/

USGS