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Agricultural Outlook Forum
U.S. Department of Agriculture

February 21-22, 2008

Surveying the Nation's Water Assets

Craig E. Hooks

SURVEYING THE NATION'S WATER ASSETS

Craig E. Hooks, Director
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Watersheds

February 21, 2008



The Challenge

- We all live in a watershed -- the area that drains to a common waterway, such as a stream, lake, estuary, wetland, aquifer, or even the ocean -- and our combined and individual actions directly affect it.
- We face many challenges to the health of our watersheds, including:
 - Failed septic tanks
 - Mercury and nitrogen deposition
 - Agricultural and stormwater runoff
 - Development
 - Loss of wetlands
 - Aquatic invasive species
- There are a variety of tools in which to address these challenges.

Monitoring and Assessment



- To understand the nature of the problem, prioritize activities, and evaluate progress, we need to assess our waters and analyze the results.
- The National Water Quality Inventory is prepared under section 305(b) of the Clean Water Act (CWA), and summarizes water quality reports submitted by the States.
- The most recent year of published data is 2002.
 - Sediments and nutrients are leading causes of impairment in assessed river miles and lake acres.
 - Agriculture is the leading source of impairment in assessed lakes, rivers and streams –
 - affecting nearly 114,000 miles of streams
 - affecting over 2 million lake acres
 - Specific agricultural sources cited by the states include such things as crop production, animal feeding operations, and grazing.

CWA Section 319 Program

- The National Nonpoint Source Program, established under section 319 of the Clean Water Act, is EPA's primary program to manage nonpoint source pollution; implemented by the states.
 - Agriculture
 - Urban runoff
 - Forestry
 - Hydromodification
 - Habitat modification
- Approximately \$100 million per year of the 319 NPS Grant Program focuses on developing and implementing watershed plans to solve water quality problems.
 - Watershed Planning Handbook
 - Management Measures/BMP Guides
 - Watershed Plan Builder Tool
- 319 Funds may be used for planning, TMDL development, monitoring, implementation, local staff coordination.

Building on Traditional Water Quality Programs

- Market-based mechanisms like trading of environmental commodities can help us meet and in some cases exceed our environmental goals.
- Established markets already exist for trading in --
 - Air pollutants: lead in gasoline phasedown 1980s, acid rain in 1990s
 - Carbon: greenhouse gas reduction
 - Habitat: endangered species habitat
 - Wetlands mitigation banking
- Over the last decade we've seen trading markets develop for water pollutants.

Water Quality Trading 101

- What is Water Quality Trading?
 - Voluntary exchange of pollutant reduction credits.
 - Sources with higher pollutant control costs may purchase pollutant credits from sources with lower control costs.
 - Transforms pollutant reductions into a valuable commodity.
- Water Quality Trading Is:
 - DRIVEN by regulation
 - GOVERNED by local trading rules
 - MOTIVATED by economics
 - BUILT on trust
- Why Trade?
 - Cost-effective
 - Equal or superior water quality improvement

Types of Trades:



Where Do We Stand With WQT?

- Much exploration over 20 years
 - A few dozen studies, pilots, state trading policies, single facility offsets, and full scale trading programs.
 - Momentum evident over past few years.
- Nutrients dominate - phosphorus and nitrogen
 - Other parameters include thermal load and sediment
- Achieving watershed goals consistent with EPA policy requires careful design and execution of trading programs.

EPA Trading Policy (2003)

- EPA policy allows for trades of:
 - Nutrients (nitrogen and phosphorus)
 - Sediment
 - Cross-pollutant trading
 - Other pollutants?
- EPA policy does not support trades of Persistent Bioaccumulative Toxics (PBTs) except on a pilot basis.
- Sellers of credits:
 - Point source sellers must reduce below permit limit.
 - Nonpoint source sellers must install BMPs
- Buyers of credits:
 - Point source buyers must meet technology limits or equivalent

Threshold Conditions for WQT

- Water quality problem is characterized and desired target identified, e.g., cap based on water quality standard, TMDL.
- Multiple point sources face more stringent NPDES permit limits, i.e., water quality based effluent limits.
- Significant pollutant control cost differences exist among PS or between PS and nonpoint sources.
- Sufficient modeling, data available to assess relative water quality impact of trades.
- States, stakeholders willing to initiate and embrace nontraditional approach to achieving water quality goals.

Challenges of Trading

- Technical Challenges:
 - Establishing baseline
 - Estimating pollutant reductions
 - Accounting for differences in timing of load reductions, pollutant form
- Implementation Challenges:
 - Landowner participation
 - POTWs wary: vulnerable to unreliable credits Difficulty connecting potential buyers and sellers
 - Accountability and verification of credits
 - Managing transaction costs
- No CWA requirement spurs nonpoint source action.
 - Voluntary participation, yet need accountability and verification

Recent Activities



- EPA Office of Water – NRCS Partnership Agreement (October 2006) – collaborate efforts to establish viable water quality trading markets.
- Tools and Funding:
 - "Getting Paid for Stewardship: An Agricultural Community Guide to Water Quality Trading Activities";
 - Targeted Watershed Grants Program: Market-based Water Quality Program Proposals - \$3 Million RFP;
 - "An Introduction to Water Quality Trading" one-day workshop;
 - "Water Quality Trading Toolkit for Permit Writers" – published in August 2007.

<http://www.epa.gov/owow/watershed/trading.htm>

Advancing Water Quality Trading

- Demand for trading will increase with adoption of state nutrient criteria.
- Encourage state environmental agencies to work with state and local natural resource and agricultural agencies.
- Encourage inclusion of trading in TMDLs.
- Promote permit toolkit and other tools as reference guides for states and local trading programs.
- Highlight lessons learned from existing trading programs.

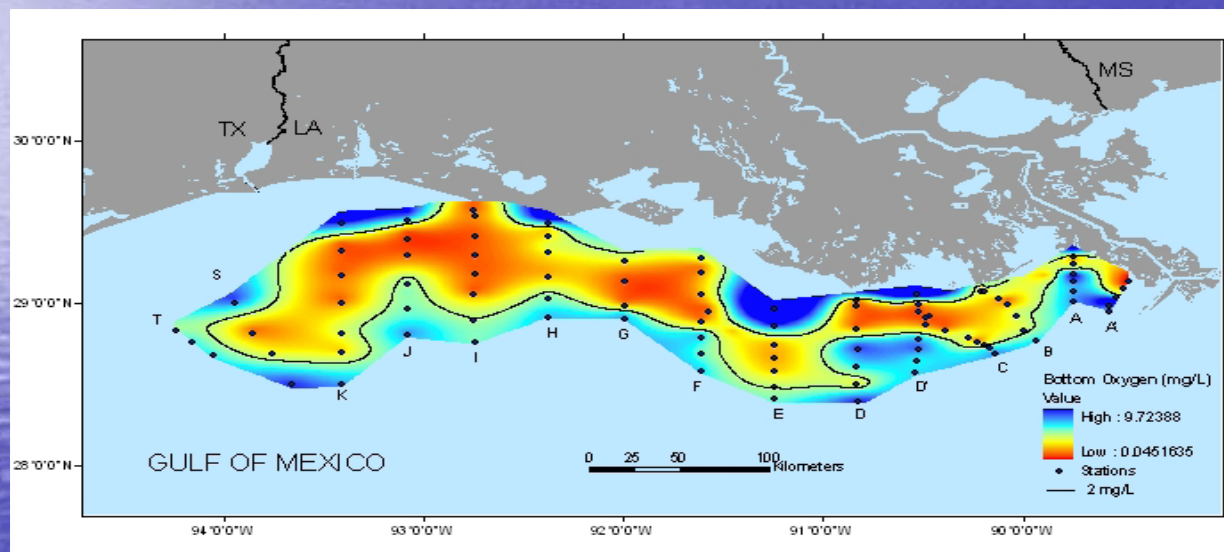
Gulf of Mexico Hypoxia

- Physical changes to the river basin and complex interactions involving nutrient pollution carried to the Gulf of Mexico by the Mississippi and Atchafalaya Rivers contributes to hypoxia - a "Dead Zone" in the Northern Gulf of Mexico.
- Hypoxia means an absence of oxygen reaching living tissues.
- In coastal waters, it is characterized by low levels of dissolved oxygen, so that not enough oxygen is available to support fish and other aquatic species.
- 41% of the contiguous U.S.; 31 States.
- Hypoxia in the Northern Gulf of Mexico may serve as a driver for nutrient and sediment trading upstream.



Challenges with Gulf Hypoxia

- Mapping efforts in 2007 delivered a sobering statistic – this summer's 20,500 square kilometer area ranks among the three largest measured Gulf zones since 1985.



Bottom-Water Dissolved
Oxygen Concentrations for July
21-28, 2007

LUMCON

- Nonpoint sources of nutrients are major cause of hypoxia in the Gulf, although there are many other contributors.
- Nonpoint source reduction programs emphasize voluntary actions.
- We will need to look for market-based solutions to help solve this problem.

Mississippi/Gulf of Mexico Task Force

- Launched in 1997, comprising federal agencies (EPA, NOAA, USDA, DOI) and states represented by agriculture or environment departments (AR, IL, IA, LA, MN, MS, MO, MN, OH, TN, WI).
- The 16th Meeting of the Mississippi River/Gulf of Mexico Watershed Nutrient Task Force will be held on February 28-29th, 2008.
- Complete the Reassessment of the Action Plan for Reducing, Mitigating, and Controlling Hypoxia in the Northern Gulf of Mexico - slated to be completed by March 2008.
- Federal agencies and states continue to work to accelerate efforts to reduce the size of the zone through building strong partnerships, developing voluntary and regulatory approaches, and increasing national awareness.

Moving Forward



- Trading activity and interest are at an all-time high.
- EPA's 2003 trading policy sets the Clean Water Act framework and provides sound guidance for trading programs.
- As a watershed management tool, trading programs can be carefully designed and implemented to help achieve results beyond conventional approaches.
- Agriculture represents an important sector for water quality credit markets.