Spotlight: The Upper Neuse River Basin Association (UNRBA)

Forrest Westall, UNRBA Pam Hemminger, UNRBA Don O'Toole, City of Durham Kenny Waldroup, City of Raleigh Alix Matos, Cardno



Introduction to the Session Forrest Westall



Panel Members

- > Forrest Westall, Executive Director of the UNRBA
- Pam Hemminger, UNRBA Chair,
 Orange County Representative
- Don O'Toole, Senior Assistant City Attorney, City of Durham
- Kenny Waldroup, Assistant Public Utilities Director, City of Raleigh
- > Alix Matos, Cardno



The Challenges of Falls Lake In a Nutshell

- > Controversial Corps of Engineers reservoir
- > Primary source for public water for one jurisdiction
- > Concerns about water quality
- > Chlorophyll-a water quality impairment
- > Legislative action to require nutrient management
- > Very restrictive nutrient reduction requirements
- > Reductions required for existing development
- > Expensive Stage I requirements
- > Costly Stage II requirements



Nutrient Reduction Requirements

- > Stage I (2011-2021)
 - Achieve standards in lower lake by 2021
 - Initial reductions watershed wide
 - Reduce loading by 20% for TN and 40% for TP
 - New development requirements implemented in 2012
- > Stage II (2021 2036)
 - Achieve standards in entire lake by 2041
 - Additional reduction in upper watershed
 - Reduce loading by 40% for TN and 77% for TP
 - Continue new development requirements



Panel Presentation Topics

- > Review the history of Falls Lake and the emergence of critical water resource issues affecting the whole watershed
- > Summarize the development of the Consensus Principles
- Highlight the reconfiguration of the Upper Neuse River Basin Association (UNRBA)
- > Examine the roles of adaptive management and the application of water quality science in examining the regulatory framework developed for Falls Lake
- > Describe the political and public policy environment in North Carolina and its potential effects on the Falls Lake Nutrient Management Strategy



History of the Issues and the Consensus Principals Don O'Toole Kenny Waldroup



The Upper Neuse Facts

Percent of watershed

Wake









Proliferating algae form light-green patches on Falls Lake, the chinking water supply for 435,000 Wate County residents. Profilerating algae form light-green patches on Falls Lake, the chinking water supply for 435,000 Wate County residents.

Raleigh wants Falls Lake cleanup now. Durham wants more time.

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FALLS LAKE POLLUTION LEVELS VARY

The sppper reaches of Table Lake have trie cliphest leves of narrogen and photomerus politikon, as indicated by the presence of chicrosphylical, a commercial analysis indicator. Excess nucl lengts such as infrogen and an applicate can read to harmful algoe growth that makes water stiffic all and accentione to their full and for human use.





The Memorandum of Agreement known as the "Consensus Principles"





Why is this effort important to Raleigh?





Why is this effort important to Durham?

Direct Costs	Responsible Party	Stage I	Stage II
WWTP	City of Durham	\$40 million	\$80 million - \$320 million
Existing development	City of Durham	\$45 million	\$645 million ???
New Development	Developers	\$45 million	\$1 billion (watershed)
Total	Both	\$130 million	\$1 billion - \$2 billion

The Re-Focus of the UNRBA *Pam Hemminger*



A Brief History of the UNRBA

- > Formed in 1996 due to continued concerns about the future water quality of Falls Lake
- Initial focus was information development and general study of the Lake and its watershed
- > The organization shifted goals and objectives following the adoption of the Falls Lake Nutrient Management Strategy and the passage of the Falls Lake Rules in 2010
- > Ongoing focus to assist member jurisdictions with Strategy implementation and reexamine the Stage II Rules



Structure of the Organization

- > Members
 - 6 counties (Wake, Orange, Durham, Person, Granville, and Franklin)
 - 7 municipalities (Raleigh, Wake Forest, Durham, Hillsborough, Creedmoor, Stem, and Butner)
- > Board of Directors
 - Each member government has a Director and alternate
- > Executive Director—critically important
- > Path Forward Committee—comprised of member experts



The Stated Purpose of the UNRBA, 2011 By-Laws

The Association is organized and shall operate exclusively as a non-profit corporation to assist its member local governments in their efforts to jointly address issues of concern to the member local governments relating to water quality and waste water management in the Upper Neuse River Basin and the Falls Lake Watershed.



What Makes the UNRBA Different?

- > Collaboration of the regulated community and end user of the water
- > The consolidation and coordination of membership response to a demanding regulatory framework
- Differing political views of regulation (rural versus suburban versus urban)
- Members willing to focus on mutual goals and not differences due to the unprecedented nutrient control regulatory requirements



The Path Forward: Increasing the Effectiveness of the UNRBA in the Era of the Falls Lake Rules

Providing a public forum to review and discuss innovative approaches to restore, protect & maintain water quality

A robust and innovative trading program with a transparent and accessible system for recording and maintaining nutrient offsets and credits. [Consensus Principles #11, Session Law 2010-115]

Technical assistance for all jurisdictions. Service needs will vary based on the jurisdiction size and existing programs.

A re-examination of the nutrient management strategy that answers key questions about the impacts of reductions and the feasibility of Stage II. [Consensus Principles #9, 15A NCAC 02B.0275(5)]

Collaboration in the Era of the Falls Lake Rules



Key Actions in Successfully Changing the Focus of the UNRBA

- > Achieving agreement within the membership on the new direction
- > Significant dues increases
- > Creation of a "Path Forward" Committee
- Retention of water resources consulting firm to guide the re-examination process
- > Retention of an Executive Director



UNRBA Contracts with Cardno

- > 2012 Re-examination Strategy
 - \$200K
- > 2013 Monitoring Program Development
 - \$300K
- > 2014+ Monitoring Program Implementation
 - \$800K per year for 4 to 5 years
- > 2013 Nutrient Credit Project
 - \$350K

Technical Support for the Goals of the UNRBA *Alix Matos, PE*



UNRBA Re-examination Strategy for Stage II





Assessed Existing Information

- > Agencies predicted the upper lake would be highly eutrophic
- > Benefits of the lake were assumed to outweigh the risk of eutrophic conditions
- Water quality improves steadily from the upper to lower end of the lake
- > Natural lake processes protect downstream waters



Linked Water Quality to Designated Uses





Cost Benefit Analysis of Stage II

- Used the State's Fiscal Analysis to estimate costs
- > Accounts for benefits
 - Increased recreational use
 - Reduced chemical costs for water treatment
- > Additional potential benefits
 - Compliance with future SDWA standards
 - Avoided costs of WTP upgrades







Potential Regulatory Options

- Use attainability analysis
 - Naturally occurring conditions or hydrologic modification
 - Significant and widespread social and economic impacts
- > Variance
- > Site specific criteria





Compliance Cannot Be Achieved with Existing Technology

- > None of the existing BMPs can achieve the required TP reductions
- > Existing development is most severely challenged

BMP	Nutrient Removal Efficiency for Each BMP Type		
	Nitrogen	Phosphorus	
Stormwater Wetlands	40%	40%	
Bioretention	35%	45%	
Infiltration Devices	30%	35%	
Buffer Restoration	30%	35%	
Grassed Swales	20%	20%	
Stage II Requirement	40%	77%	



Nutrient Credit Project

- > Contributors/Partners
 - \$300,000 contributed by the UNRBA
 - \$50,000 grant from the State
- Develop nutrient credits for measures that currently do not have State approved credits
- Develop a tool that local governments can use to calculate credits





Adaptive Monitoring Program (~\$800,000 per year)

- Adaptations
 - Test models
 - Revise program

Re-examination

- Update lake model
- Recalculate loading targets
- Support regulatory options

Optimization

- Parameters
- Frequencies
- Locations

Analyses

- Identify data gaps
- Statistical models

Moving Forward in the Face of Regulatory Challenges Forrest Westall



A Personal Perspective of the UNRBA: Why Get Involved?

- > Water quality management focused
- > "Bleeding edge" of technology
- > High economic stakes
- > Respect all members views
- > Adaptive management



UNRBA is Moving Forward

- > Committed to achieving Stage I
- > Dues from \$ 120,000 in 2011 to over \$ 800,000 in FY 2015
- > Credit development project \$ 300,000
- > Monitoring program \$800,000 / yr for 4 to 5 years
- > New Development in place 2012
- > WWTP upgrades for Stage I are near completion
- > Falls Lake Watershed versus Jordan Lake Watershed



Balancing Ecological Science and Effective Public Policy

- > Southern Piedmont man-made reservoir
- > Strategy is aimed at meeting *Chlorophyll-a* standards
- > Other water quality concerns (TOC and water treatment)
- > Costs of strategy versus water quality benefits
- > Regulatory and legal options
- > Reluctant regulatory agencies
- > Member interests may diverge in the future





These End Points Cannot be Achieved Unless the UNRBA can:

- > Maintain cooperative relationships
- > Keep the members at the table
- > Provide compelling information to support the decisions of the organization
- > Deal effectively with changing political climate
- > Meet the needs of a diverse membership
- > Promote a cooperative and flexible State and Federal response to the science that the UNRBA is developing







