

Multi-State TMDLs and Watershed Management Plans: *Challenges and Successes*

2007 NACWA Clean Water Law Seminar – Palm Springs, CA

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November 7, 2007



Presentation Overview

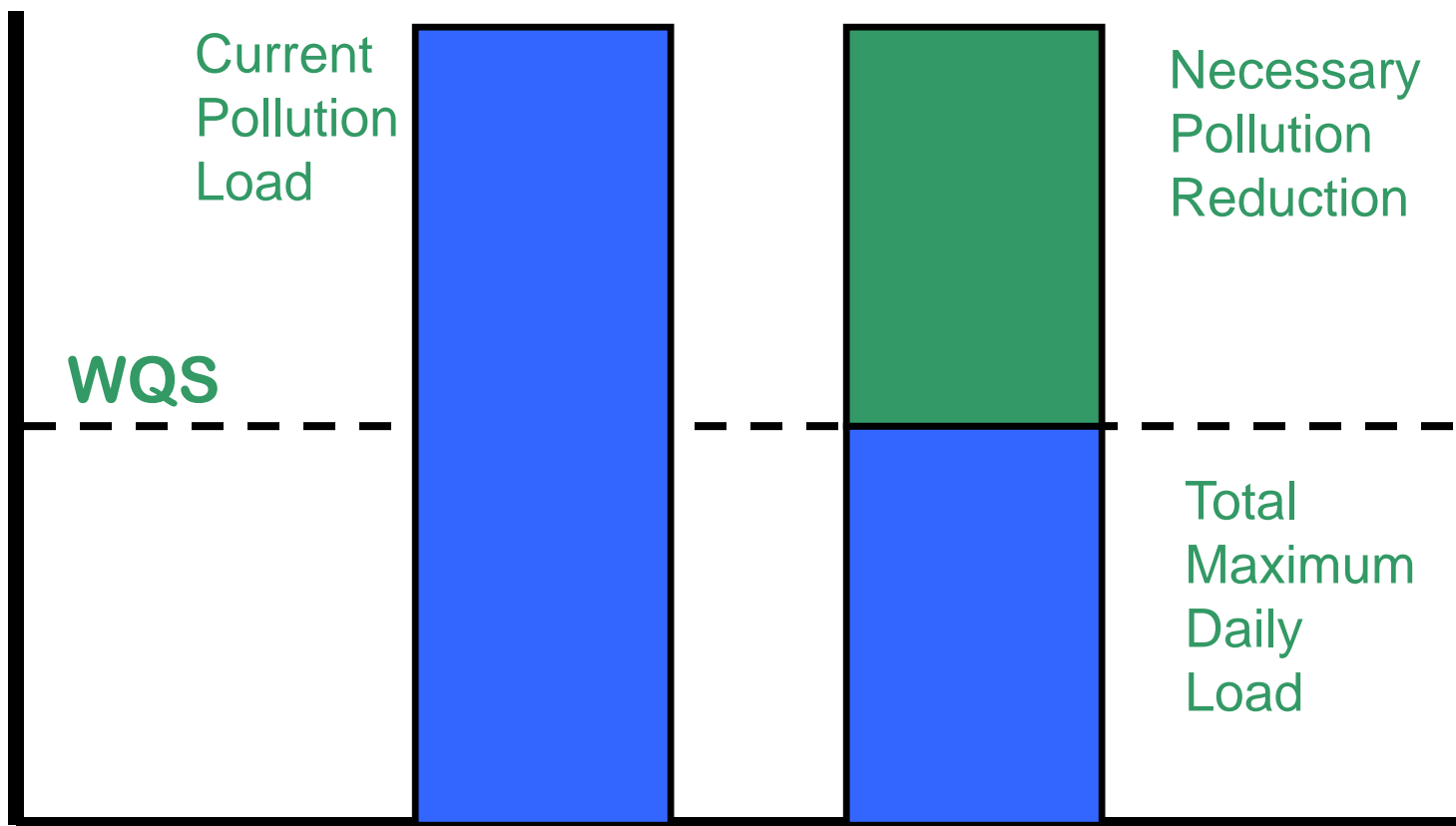
- 💧 Multi-Jurisdictional TMDLs
- 💧 LIS TMDL – CT River Nitrogen
- 💧 Lake Champlain – Phosphorus
- 💧 Challenges and Successes

What is a TMDL?

TMDL = Total Maximum Daily Load

- 💧 Amount of a specific pollutant that a waterbody can receive and still meet water quality standards (WQS)
- 💧 States required to develop TMDLs for all waters listed on their 303(d) list (of impaired waters)
- 💧 TMDLs approved/disapproved by EPA

What is a TMDL?



What is a TMDL?

TMDL = Waste Load Allocation (WLA) + Load Allocation (LA) +/- Margin of Safety (MOS)

💧 WLA: Sum of all point sources

💧 LA: Sum of all nonpoint sources
(including atmospheric deposition)

💧 MOS: Margin of safety

Long Island Sound Water Quality

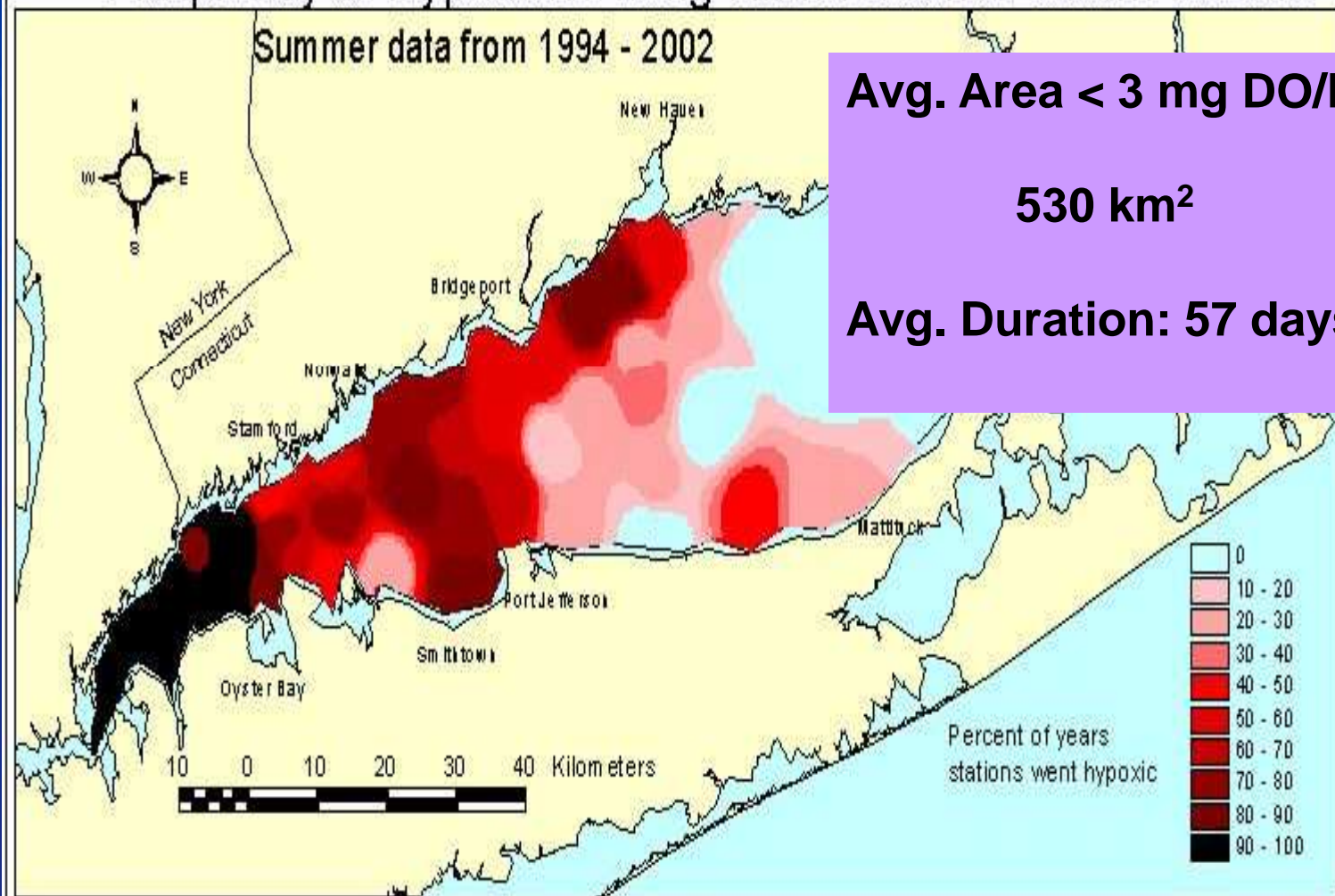
Problem

-  Increased Nitrogen Loading
-  Excessive Algal Growth
-  Reduced Dissolved Oxygen Levels

GOAL: Achieve WQS for DO in LIS

Frequency of Hypoxia in Long Island Sound Bottom Waters

Summer data from 1994 - 2002






Avg. Area < 3 mg DO/L:

530 km²

Avg. Duration: 57 days

Development of TMDL for Dissolved Oxygen

Phased Approach

-  Phase I: 1990, establish and maintain baseline nitrogen loading
-  Phase II: 1994, low cost STP retrofits using biological nitrogen removal techniques
-  Phase III: 1998, adoption of “Phase III Actions for Hypoxia Management”

Phase III : *In-basin*

- 💧 **Set a 58.5% reduction target from in-basin point and terrestrial nonpoint source nitrogen loads**
- 💧 **This equates to a 50% reduction from the baseline**
- 💧 **10% reduction in urban and agricultural runoff and 64% reduction in point sources**
- 💧 **Implementation to occur in a 15-year time frame**
 - 💧 **2004: 40% of reduction target**
 - 💧 **2009: 75% of reduction target**
 - 💧 **2014: Met reduction target for in-basin sources**

TMDL Implementation Techniques for *In-Basin* States

💧 Permitting

💧 Stormwater Phase II controls

💧 319 projects/grants

💧 Watershed Approach

Use Flexibility and Market Forces to Achieve Efficient Allocations

- 💧 Set fifteen year goal with five year increments
- 💧 Allocate equal reductions to each management zone and discharger
 - 💧 Permits containing final limits and 15 compliance schedules
- 💧 Allow flexibility in how to achieve reductions within a zone and among facilities considering relative impacts
 - 💧 bubble permit (NY)
 - 💧 general permit (CT) and credit trading
- 💧 Commit to five-year evaluations to update TMDL

Watersheds

LIS 2003 Agreement Goal: *Assure a viable LIS watershed that supports vibrant and healthy aquatic life, and minimizes the negative effects of erosion, sedimentation, and flooding on the Sound and its tributaries and embayments.*

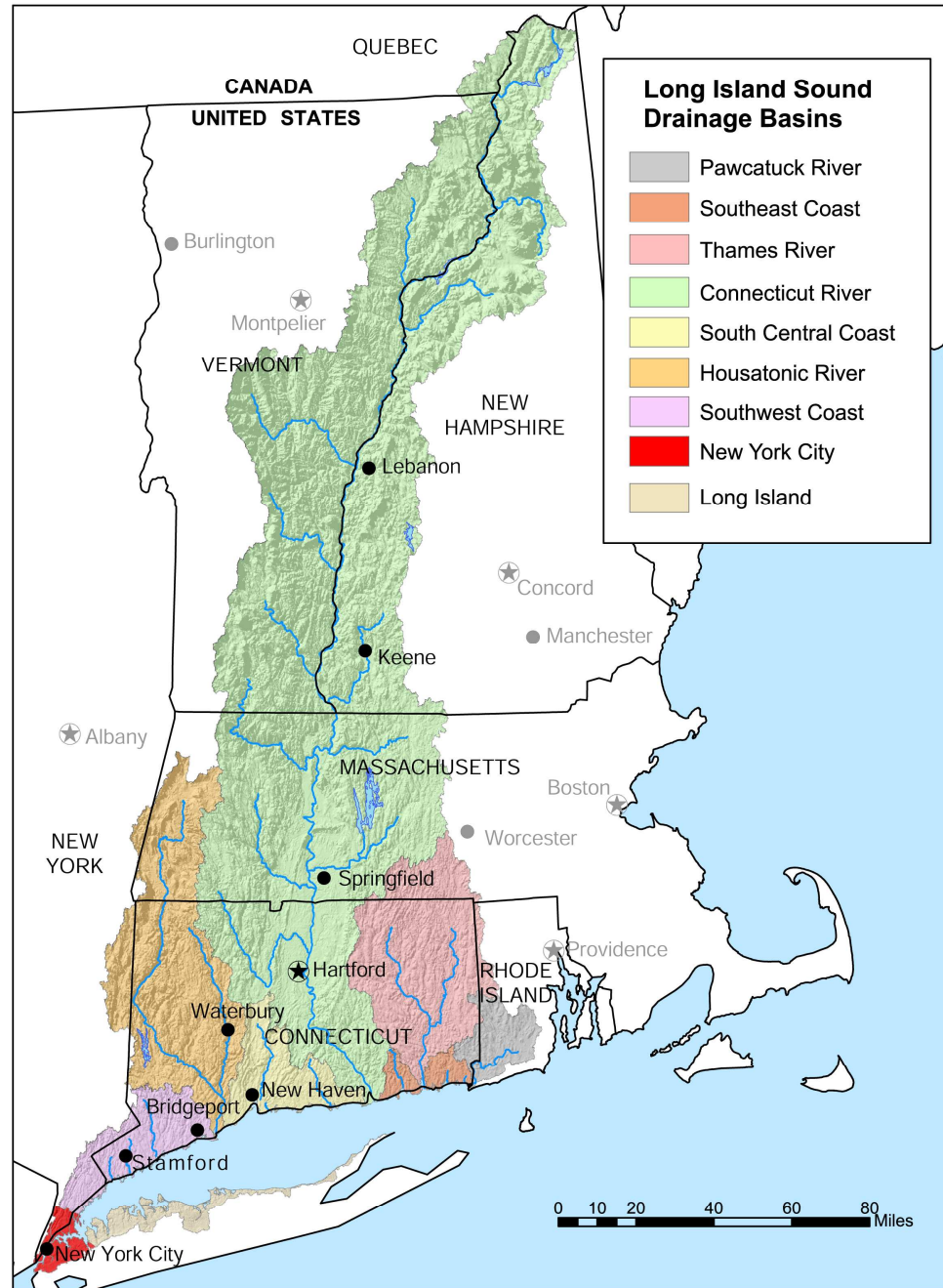
- 💧 Develop or implement watershed restoration plans in 50% of LIS watersheds by 2010.
- 💧 Identify the percent of impervious surfaces, based on available land use/land cover data.
- 💧 Encourage municipalities to limit impervious surfaces to a rate consistent with population change.
- 💧 Assess amount of riparian forest buffer and encourage expansion of riverine forested buffers.

Tracking Progress

- 💧 Long Sound is monitored throughout the year by Connecticut DEP
 - 💧 18 stations, surface and bottom samples monthly from October to May
 - 💧 48 stations, surface and bottom samples every other week from June to September
- 💧 Permit data from sewage treatment plants

Phase IV : *Out-of-Basin*

- 💧 Assumes the attainment of nitrogen reduction targets *In-Basin*
- 💧 25% reduction in *out-of-basin* point sources (Upper Connecticut River States)
- 💧 10% reduction in *out-of-basin* urban and agricultural nonpoint sources
- 💧 18% reduction in nitrogen from atmospheric deposition based on the implementation of Clean Air Act activities



Documenting *Out-of-Basin* Sources

- 💧 CT River Nitrogen Workgroup
- 💧 Modeling nitrogen loading into Connecticut River using SPARROW
- 💧 Connecticut River Ambient Monitoring (2002-2005)
- 💧 Connecticut River Nitrogen Attenuation Study (2005)

LIS TMDL - Next Steps

- 💧 Use the updated dissolved oxygen water quality standards to revisit nitrogen reductions for the Sound
- 💧 Run the Regional Modeling System for Aerosols and Deposition (REMSAD) to look at impacts of the Clean Air Interstate Rule (CAIR)
- 💧 Revisit/Revise the LIS TMDL
- 💧 Development of nitrogen reduction management plan matrix

Lake Champlain

Problem

-  Increased Phosphorus Loading
-  Excessive Algal Growth

GOAL: Achieve WQS for Phosphorus

The Lake Champlain Basin



Lake Champlain TMDL

💧 Point and Nonpoint Contributions

💧 Implementation

- 💧 Lake Champlain Basin Program

- 💧 Stormwater Litigation

- 💧 Comprehensive Nutrient Management Plan

Challenges and Successes

Challenge

-  Limited Watershed-Based Funding
-  Long-Term Implementation
-  Regulatory/Legal Questions: Authority

Success

-  Coordination and Partnerships
-  WQ Improvements
-  Information Collection and Sharing



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