A Water-Quality Trading CHRISTMAS CAROL

Presentation Overview

- TRADING PAST
  - The 2003 EPA Policy and Guidance
- TRADING PRESENT
  - State of Water Quality Trading
- TRADING YET TO COME…
  - A New Direction

United States Environmental Protection Agency | Office of Water (4102) | EPA 800-R-96-001 May 1996

EPA

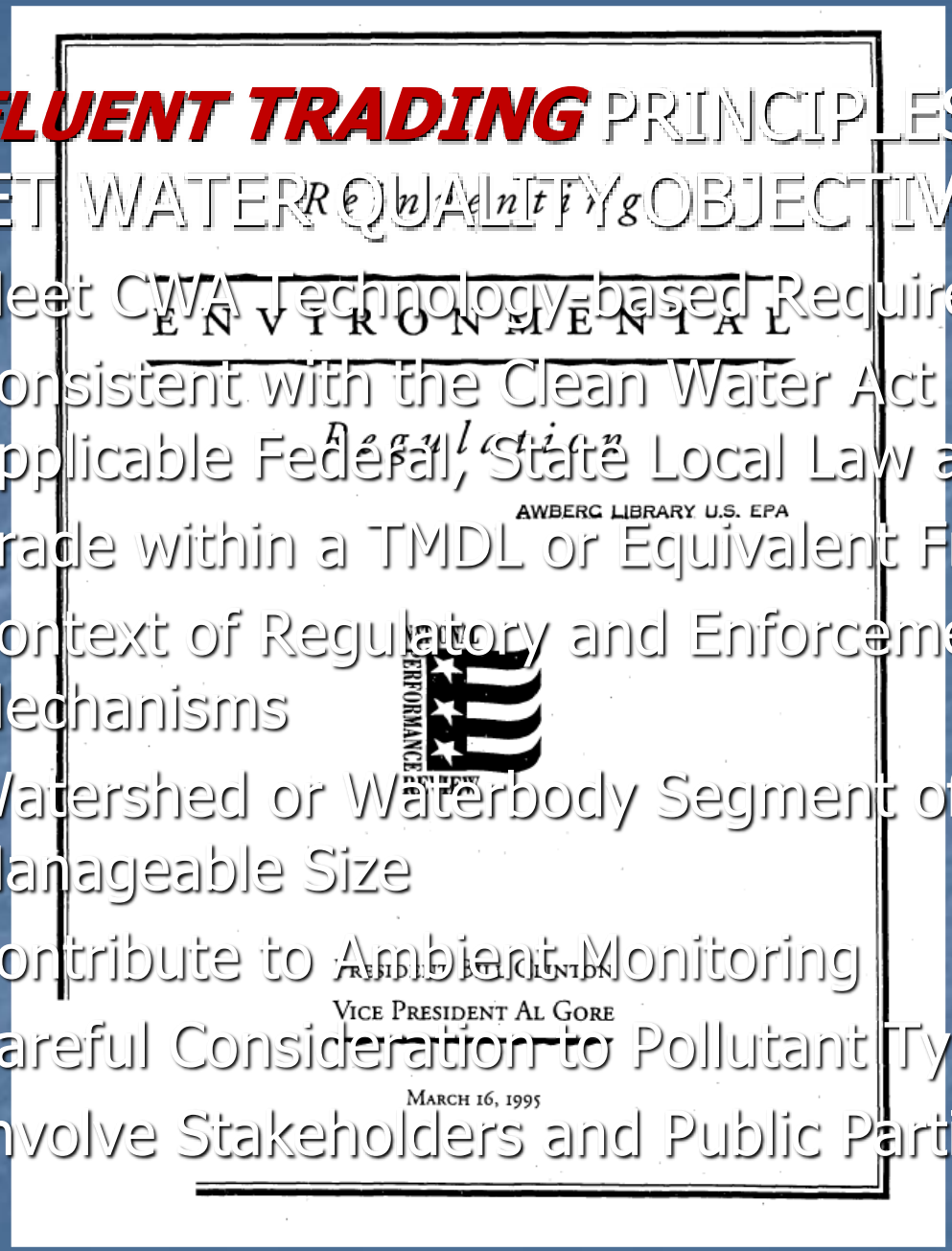
Draft Framework for Watershed-Based Trading

Why Is EPA Publishing This Trading and Water Quality Framework Now?

In response to President Clinton's *Reinventing Environmental Regulation* (March 1995), EPA is ***strongly promoting the use of watershed-based trading***. Trading is an innovative way for water quality agencies and community stakeholders ***to develop common-sense, cost-effective solutions*** for water quality problems in their watersheds.

Trading provides watershed managers with opportunities to facilitate implementing loading reductions in a way that ***maximizes water quality and ecological improvements***.

- ***EFFLUENT TRADING*** PRINCIPLES TO MEET WATER QUALITY OBJECTIVES
  - Meet CWA Technology-based Requirements
  - Consistent with the Clean Water Act and Applicable Federal, State Local Law and Policy
  - Trade within a TMDL or Equivalent Framework
  - Context of Regulatory and Enforcement Mechanisms
  - Watershed or Waterbody Segment of Manageable Size
  - Contribute to Ambient Monitoring
  - Careful Consideration to Pollutant Types
  - Involve Stakeholders and Public Participation



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Office of Water
Water Quality Trading Policy
January 13, 2003

I. Background and Purpose of the Policy

The Clean Water Act (CWA) was enacted in 1972 to ***restore and maintain the chemical, physical and biological integrity*** of the nation's waters.

remains critical to success in controlling point source pollution and restoring the nation's

The United States Environmental Protection Agency (EPA) believes that market-based approaches such as water quality trading ***provide greater flexibility*** and have potential to ***achieve water quality and environmental benefits greater than would otherwise be achieved*** under more traditional regulatory approaches.

- TRADING OBJECTIVES:
  - Early Reductions
  - Reduce Costs
  - Economic Incentives
  - Offset New/Increased Loads
  - Long-term Improvements
  - Multiple Ecological Benefits

Policy Statement

- Consistent with the Clean Water Act
- Trading Areas Comprise a TMDL Watershed or Area
- Nutrients and Sediments
- Cross-pollutant Trading Allowed (e.g., DO Standard)
- Baselines-
  - Consistent with Water Quality Standards
  - Credits = Pollutant Reductions greater than required by regulation or TMDL
  - Include both Point Source WLA and NPS Load Allocation

When Trading May Occur

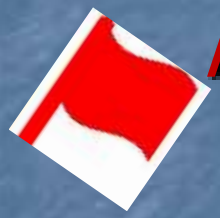
- To Maintain WQS
  - Compensating for new or increased discharges
- Pre-TMDL in Impaired Waters
  - Progress towards WQS or Designated Use Attainment
  - If WQS/DU Not Attained – Develop a TMDL
- TMDL Trading
  - Consistent with Assumptions and Requirements of the TMDL
  - Encourages Trading Requirements in TMDL and NPDES permits

Alignment with the Clean Water Act

- Provisions Included in:
  - Water Quality Management Plans
  - Continuing Planning Process
  - Watershed Plans
  - Water Quality Standards
    - Antidegradation
    - Antibacksliding
  - Enforceable Mechanisms
    - TMDL
    - Permits

A 'n A

- Antidegradation: *to maintain and protect existing instream water uses*



  - EPA does not believe that trades and trading programs will result in "lower water quality", or that antidegradation review would be required when trading achieves a no net increase and does not result in any impairment of designated uses

A 'n A

- Antibacksliding: NPDES permit prohibition of effluent limitations, permit conditions, or standards less stringent than those established in the previous permit

- Generally be *satisfied where a point source increases its discharge through the use of credits in accordance with water quality based effluent limitations (WQBEL)* in an NPDES permit, consistent with provisions for trading under a TMDL or a pre-TMDL included in a watershed plan

- Also, generally satisfied where a point source generates pollution reduction credits by reducing its discharge below a WQBEL that implements a TMDL, *provided that the total pollutant load to the receiving water is not increased*

Common Elements of A Credible Program

- Legal Authority and Mechanisms
- Units of Trade
- Creation and Duration of Credits
- Quantifying Credits and Addressing Uncertainty
  - Adopt methods to account for the greater uncertainty in estimates of nonpoint source loads and reductions
- Compliance and Enforcement Provisions
- Public Participation and Access to Information
- Program Evaluations (Audits)

EPA's Oversight Role

- Consult with EPA throughout development of trading programs to facilitate alignment with the CWA
  - Approval or Establishment of TMDLs
  - Approval of Revisions to Water Quality Standards
  - Review of NPDES permits
- Trading Programs Consistent with this Policy will not Necessarily Warrant a Higher Level of Scrutiny
- However, where questions or concerns arise, EPA will use its oversight authorities to ensure that trades and trading programs are fully consistent with the CWA

Types of Trading Programs

- Intra-Plant – among outfalls
- Pretreatment – among indirect sources
- Point-to-Point – between/among point sources in a shared watershed
- Point-Nonpoint – point source arranges for NPS reductions in a shared watershed
- Nonpoint-Nonpoint – NPS arranges for reductions from another NPS in a shared watershed

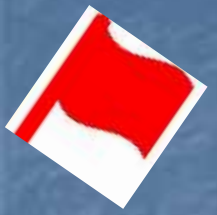
Types of Trading Programs

- Cap-and-Trade
  - A ceiling on the combined pollutant load
  - May remain fixed or decline over time
  - Participant pollutant allocations may be traded
- Case-by-Case
  - Require negotiation, review, and pre-approval for trades
  - Usually one-time, site-specific trades
  - Also may include multiple trades
- Open Market
  - Rules to allow trades between facilities without pre-approval by regulators
  - No mandatory system-wide cap or defined and limited initial allocation
  - Participation is usually voluntary
  - Facilities can trade and often bank credits or use them internally to achieve compliance

Market Structures

- Bilateral Negotiations:
  - Buyer and the seller to exchange information and negotiate the terms of trade
  - Public authority approval of trade and to set trading ratios
- Clearinghouse:
  - Oversight intermediary pays for reduction credits and sells credits to buyers
- Exchange:
  - Open information structure and fluid transactions between buyers and sellers
  - Price for credits is fully visible
  - Pollutant control units are equalized using source-specific equivalency factors
- Sole-Source Offsets:
  - An individual source meets a WQS at if pollutants are reduced either on-site or off-site
- Third Party:
  - Trades are conducted by a broker, e.g., a regulatory agency, a NGO, or an independent body established for the purpose of trading

Benchmark Your Situation



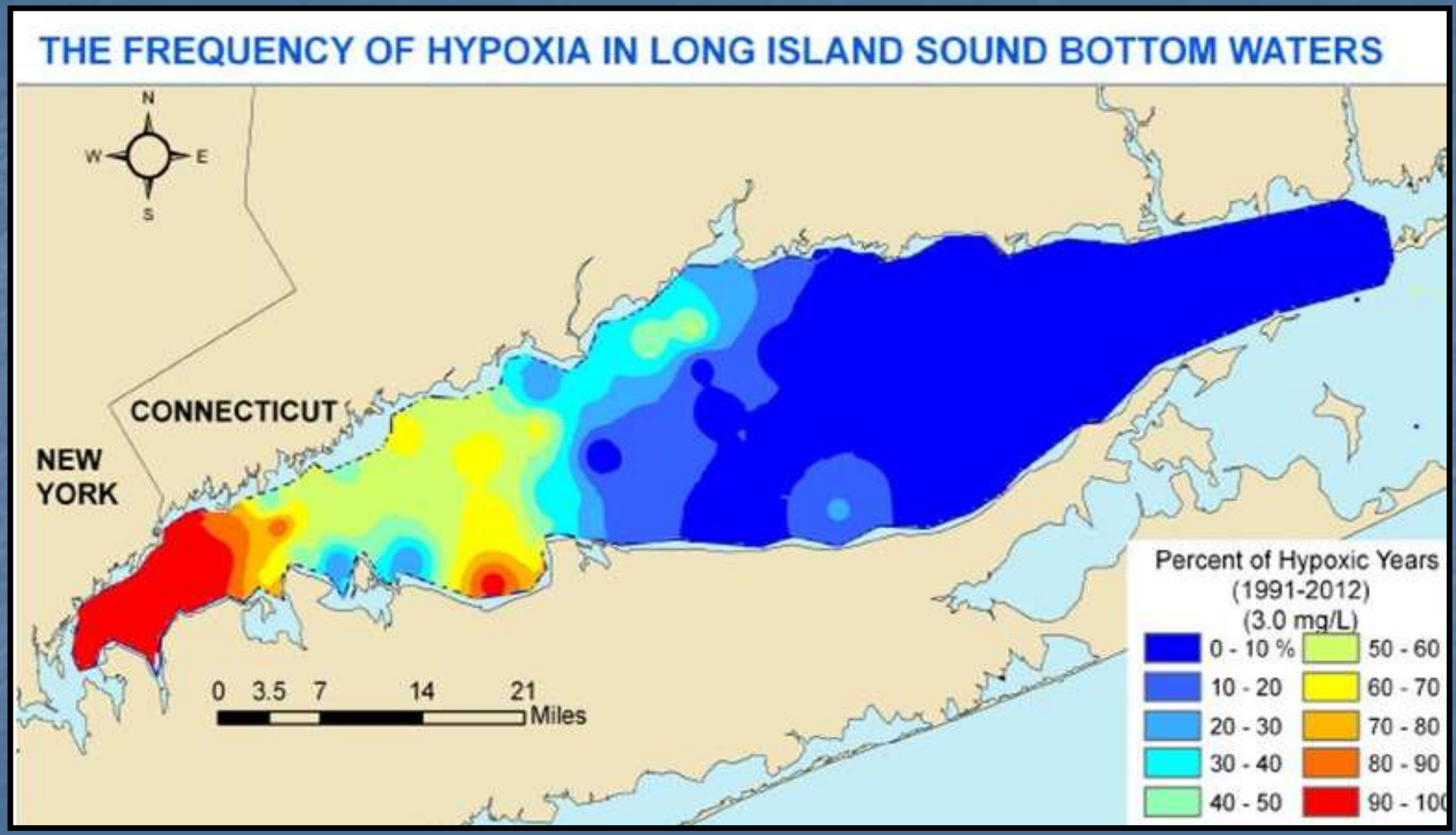
- What water quality problem(s)/ pollutant(s) are you talking about?
- Is there an imperative to make pollutant reductions and water quality improvements now, or can you see one on the horizon?

- What sources contribute to the problem (and could help solve it)?
- What kind of data do you have—water quality, watershed, cost, effectiveness?
- What is your experience with stakeholder cooperation and collaboration?

- Where do you want to start for your watershed scale?

WERF 02-WSM-1

Primary Challenge: Nutrient Enrichment – Hypoxia!

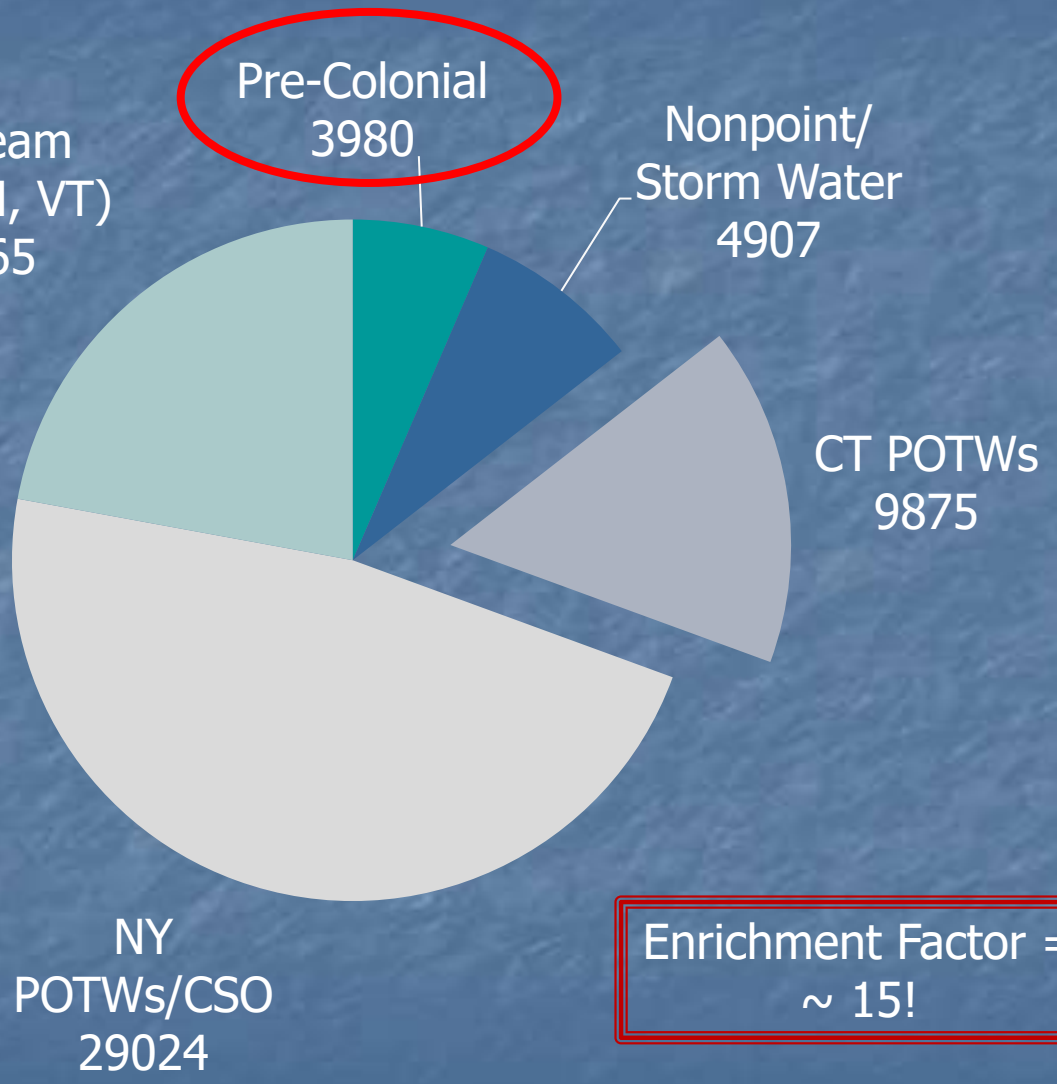


Total Load =
61,351 tons N/Year

TMDL Load =
36781 tons N/Year

Reduction =
24,570 tons N/Year

Nitrogen Loads (Tons N/Year) by Source
Delivered to Long Island Sound



Enrichment Factor =
~ 15!

Long Island Sound TMDL

(A *Phased* Total Maximum Daily Load - 2000)

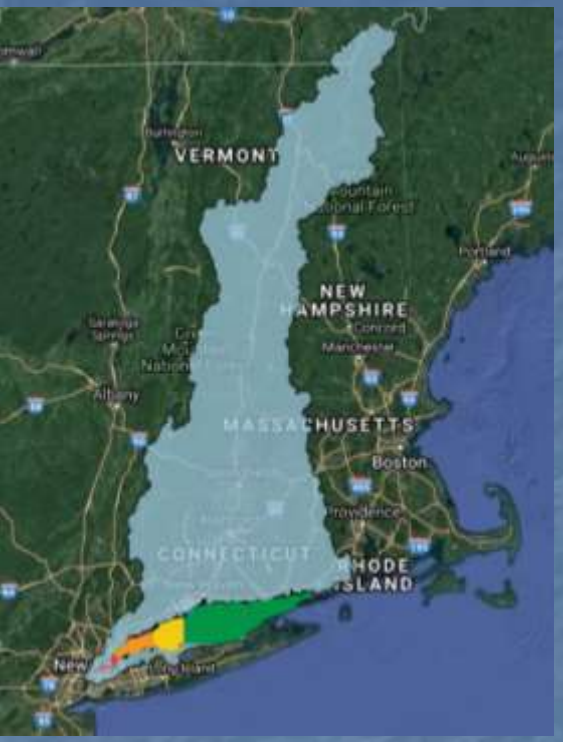
- Enforceable Schedule
- Meet Water Quality Standards
- CT & NY Nitrogen Reduction Goal
  - 58.5% by 2014
    - 10% reduction to urban and agricultural runoff
    - 59-64% reduction to point sources
- Allows "Trading"
- Future Actions
  - Out of State Sources (runoff –10%, pt sources – 25%)
  - Atmospheric Deposition (CAIR Rule and SIPs)
- Periodic Revision (Adaptive Management)
  - Revision Every 5 Years

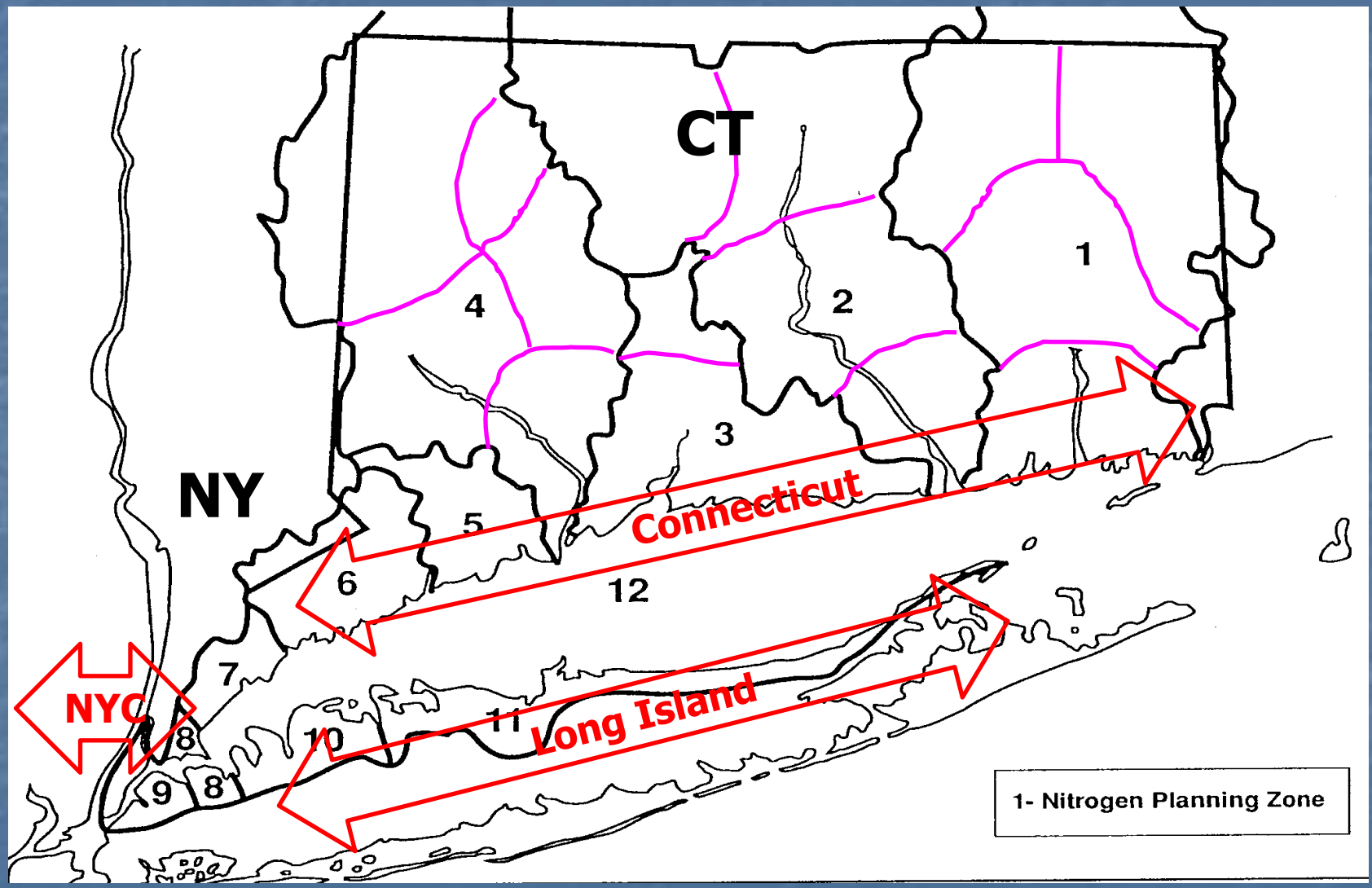
Enrichment Factor = ~ 9!

About CT's Nitrogen Credit Exchange…

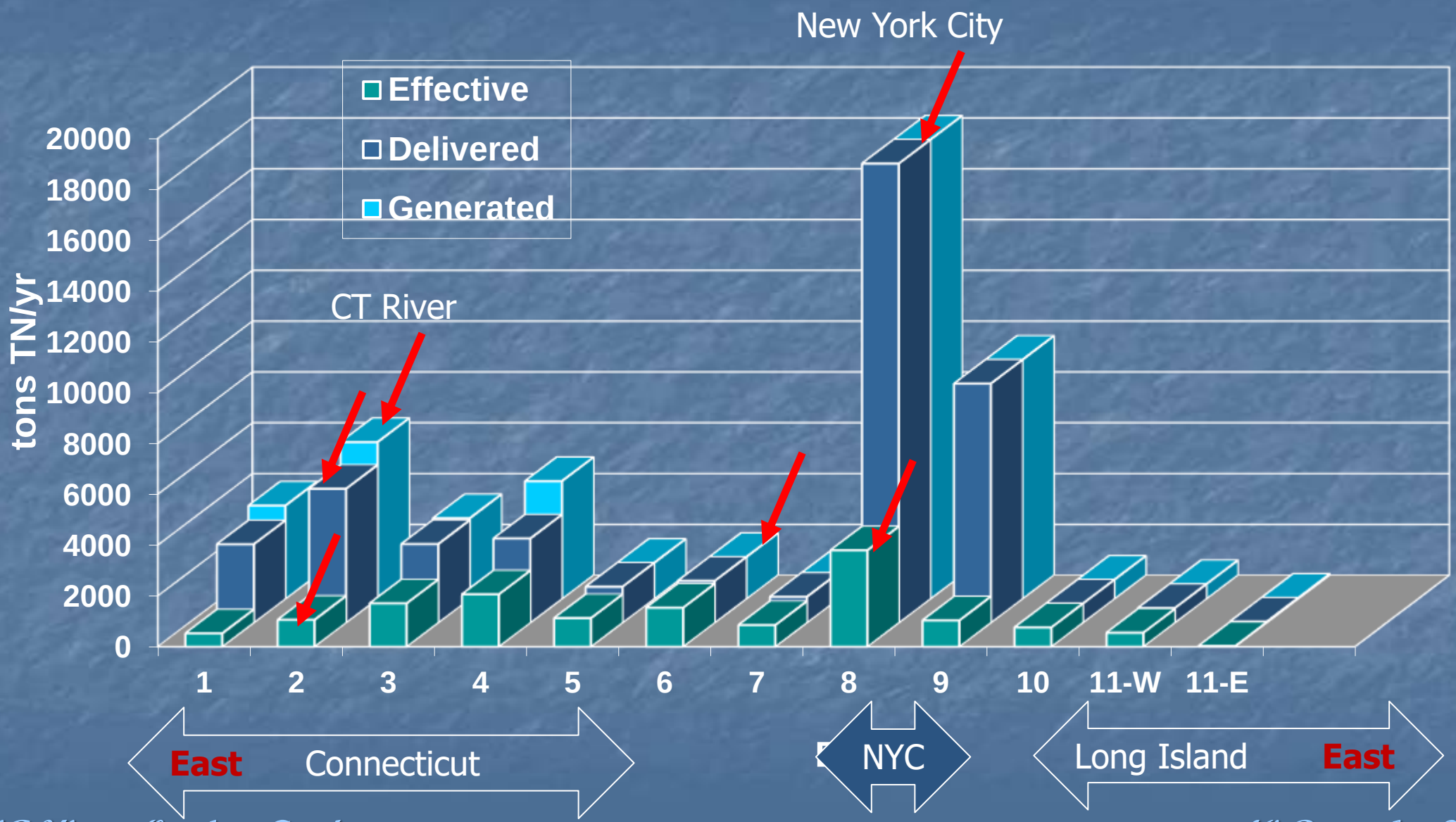
- 80 POTW's in CT (Point Source-to-Point Source)
- Regulatory Driver: TMDL for Dissolved Oxygen
- Incentive Based – Cap-and-Trade Exchange
- Regulatory Authority: State General Permit
  - Permit Limits ramped down Annually
  - Exceed your limit – you sell
  - Don't meet your limit – you buy
- Centrally Managed by NCAB – The "Bank"
  - Annual Trades
  - Pricing - Project Costs and Performance
- Financed by CT Clean Water Fund (SRF)

LIS Nitrogen Management Zones

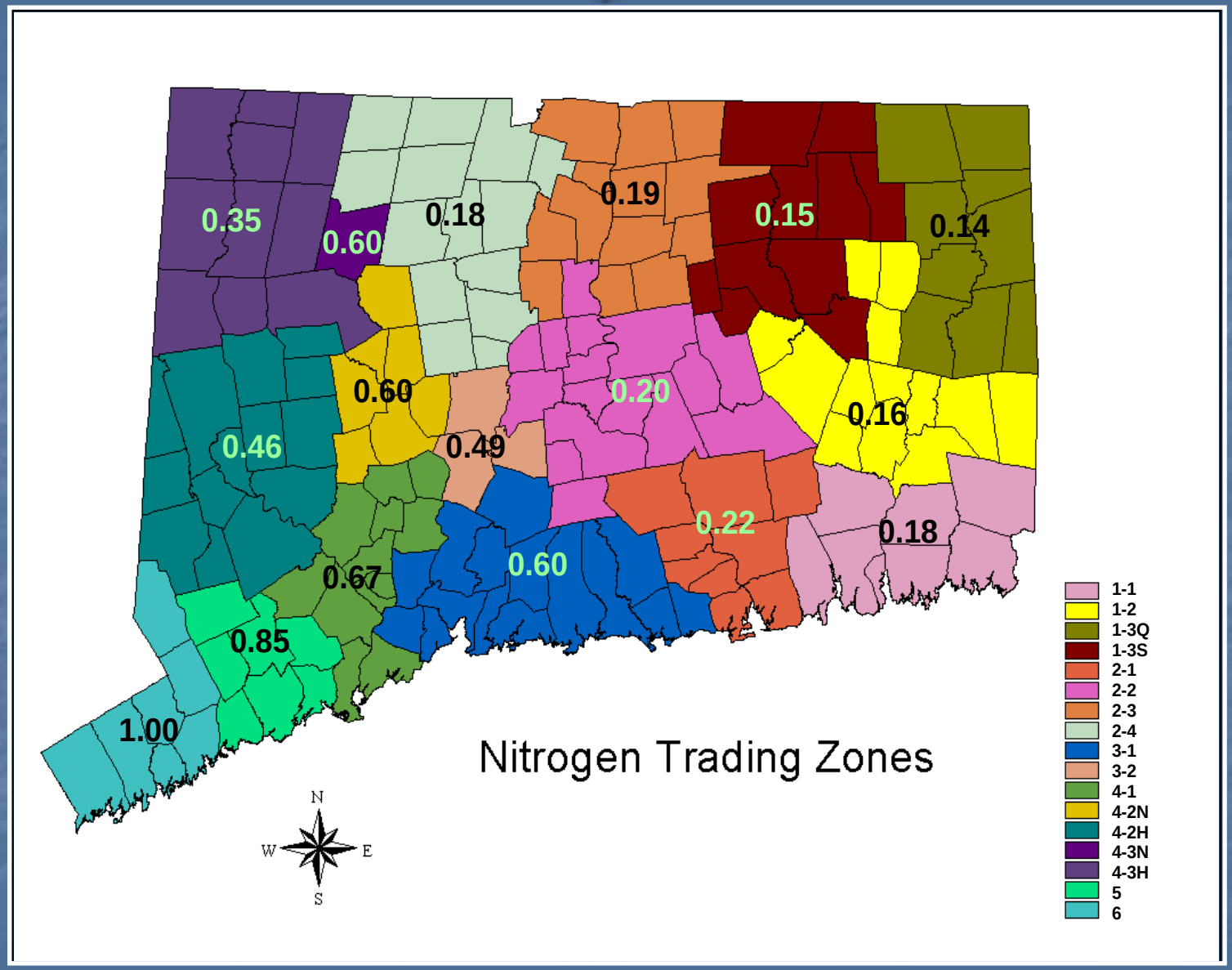




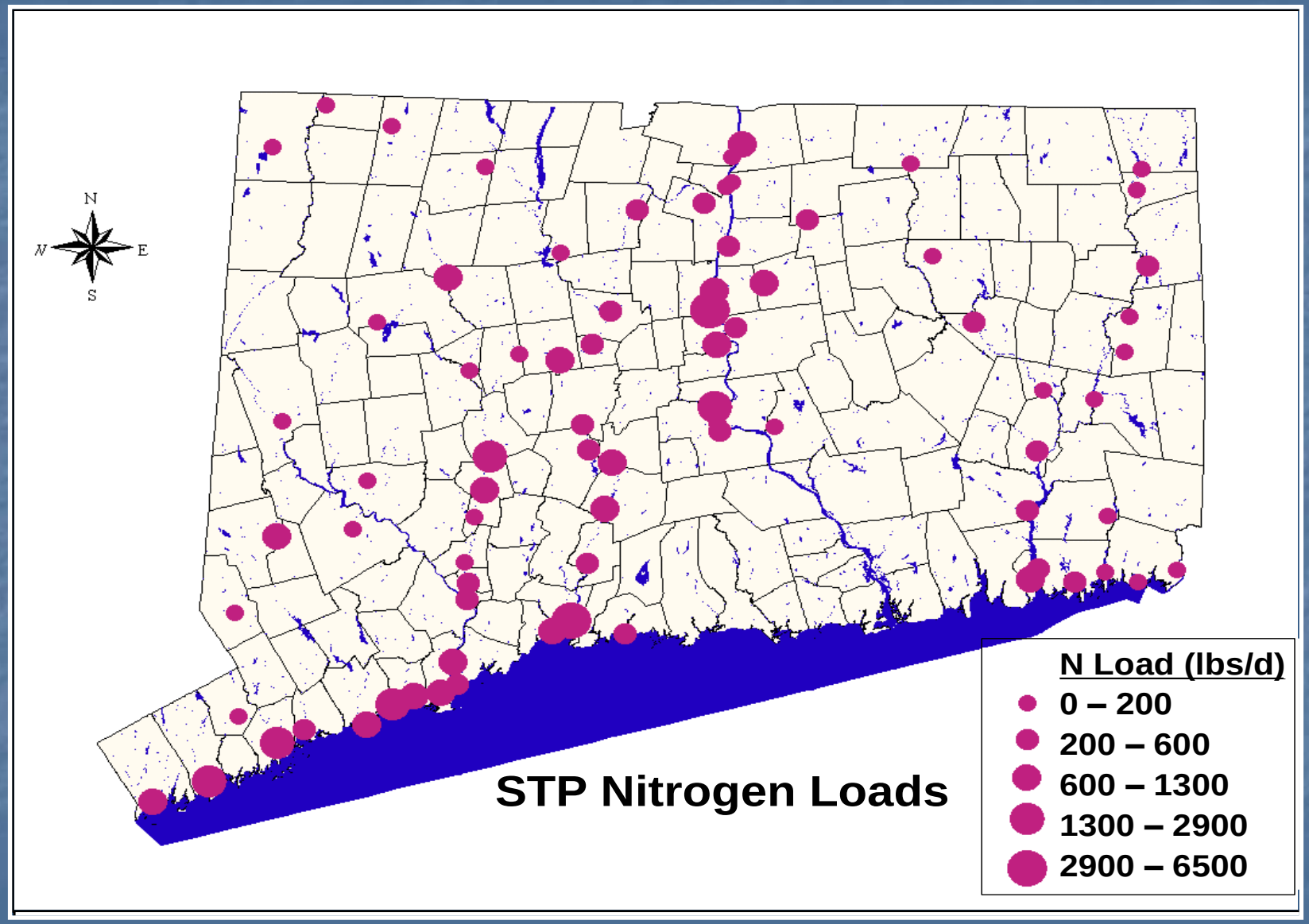
CT & NY TN Sources and Effect in LIS



Trading Ratios



POTW Distribution in CT



CT Nitrogen General Permit

Connecticut Department of ENERGY & ENVIRONMENTAL PROTECTION

79 Elm Street • Hartford, CT 06106-5127 www.ct.gov/deep Affirmative Action/Eq

General Permit for Nitrogen Discha

Effective Date: January 1, 2019
Expiration Date: December 31, 2023

Bureau of Water Protection and Land Reuse
Water Planning and Management Division
860-424-3704

1 of 13

General Permit for Nitrogen Disc

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APPENDIX 1

ANNUAL DISCHARGE LIMITS FOR TOTAL NITROGEN

Zone	Publicly Owned Treatment Works	Equivalency Factor	Total Nitrogen (Pounds/Day) 2019-2023
1	JEWETT CITY WPCF	0.17	15
1	GROTON CITY WPCF	0.18	99
1	GROTON TOWN WPCF	0.18	153
1	KILLINGLY WPCF	0.14	131
1	LEDYARD WPC	0.18	7
1	MONTVILLE WPCF	0.18	118
1	NEW LONDON WPCF	0.18	386
1	NORWICH WPCF	0.18	201
1	STONINGTON PAWCATUCK WPCF	0.17	24
1	PLAINFIELD NORTH WPCF	0.14	34
1	PLAINFIELD VILLAGE WPCF	0.14	24
1	PUTNAM WPCF	0.14	53
1	SPRAGUE WPCF	0.16	7
1	STAFFORD SPRINGS WPCF	0.15	60
1	STONINGTON BOROUGH WPCF	0.18	14
1	STONINGTON MYSTIC WPCF	0.18	27
1	THOMPSON WPCF	0.14	10
4	SHELTON WPCF	0.67	106
4	STRATFORD WPCF	0.67	356
4	THOMASTON WPCF	0.60	42
4	TORRINGTON WPCF	0.60	248
4	WATERBURY WPCF	0.60	1049
5	BRIDGEPORT EAST WPCF	0.85	362
5	BRIDGEPORT WEST WPCF	0.85	1041
5	FAIRFIELD WPCF	0.85	406
5	WESTPORT WPCF	0.85	87
6	GREENWICH WPCF	1.00	479
6	NEW CANAAN WPCF	1.00	64
6	NORWALK WPCF	1.00	718
6	RIDGEFIELD SOUTH ST. WPCF	1.00	29
6	STAMFORD WPCF	1.00	926

NCAB Reporting

Connecticut Department
of
Energy and Environmental Protection

Katie S. Dykes, Commissioner
79 Elm Street
Hartford, CT 06106-5127

Rocky Hill WPCF

Report of the Nitrogen Credit Advisory Board
for Calendar Year 2018
To the Joint Standing Environment Committee of the
General Assembly

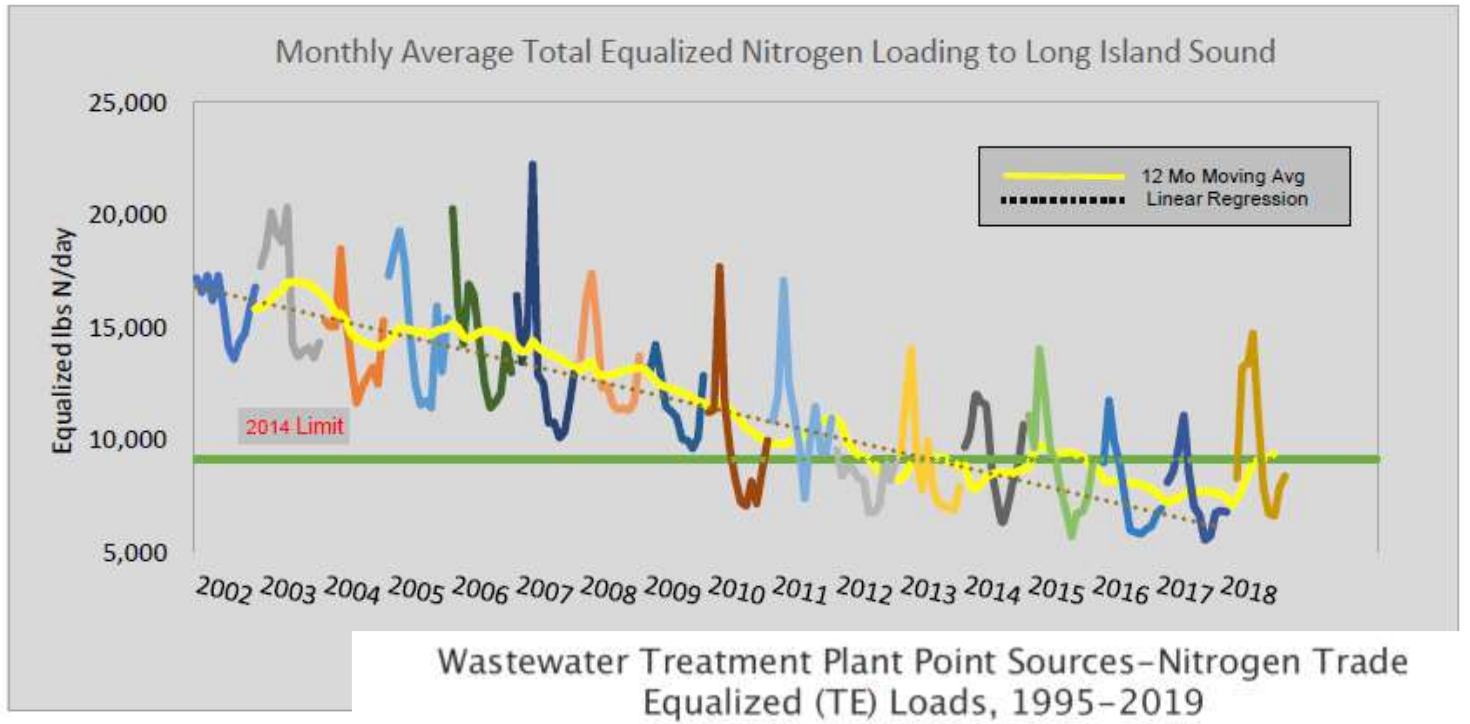
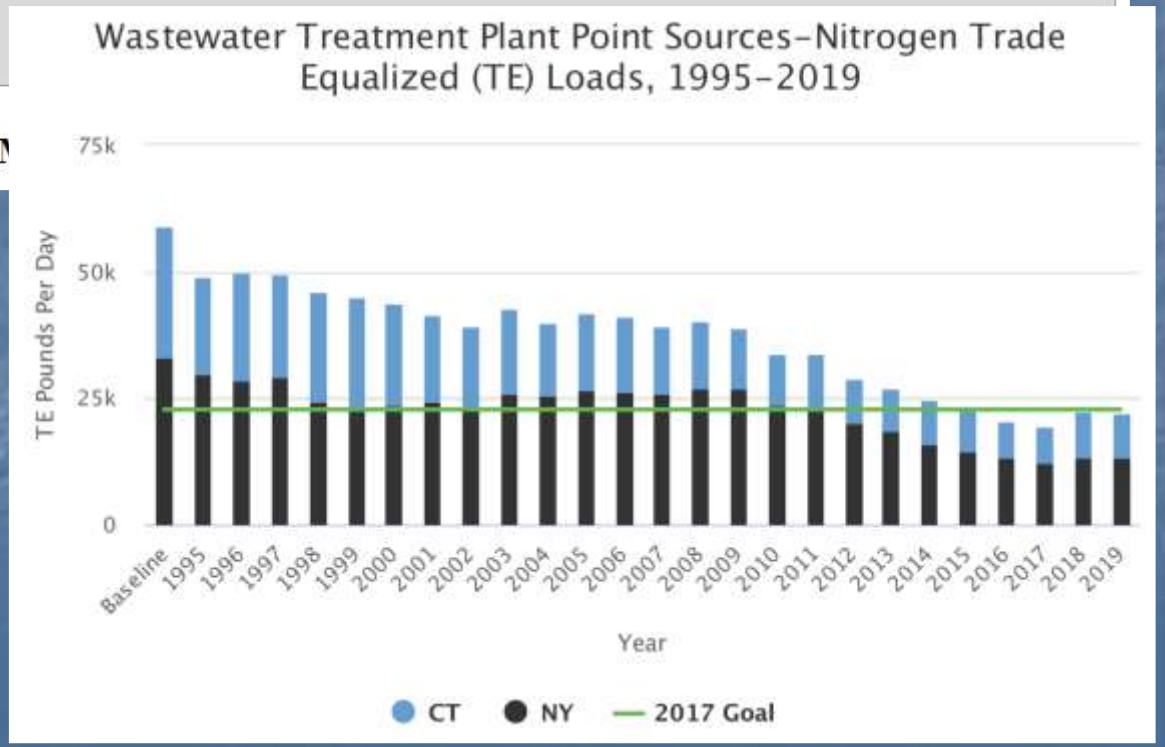
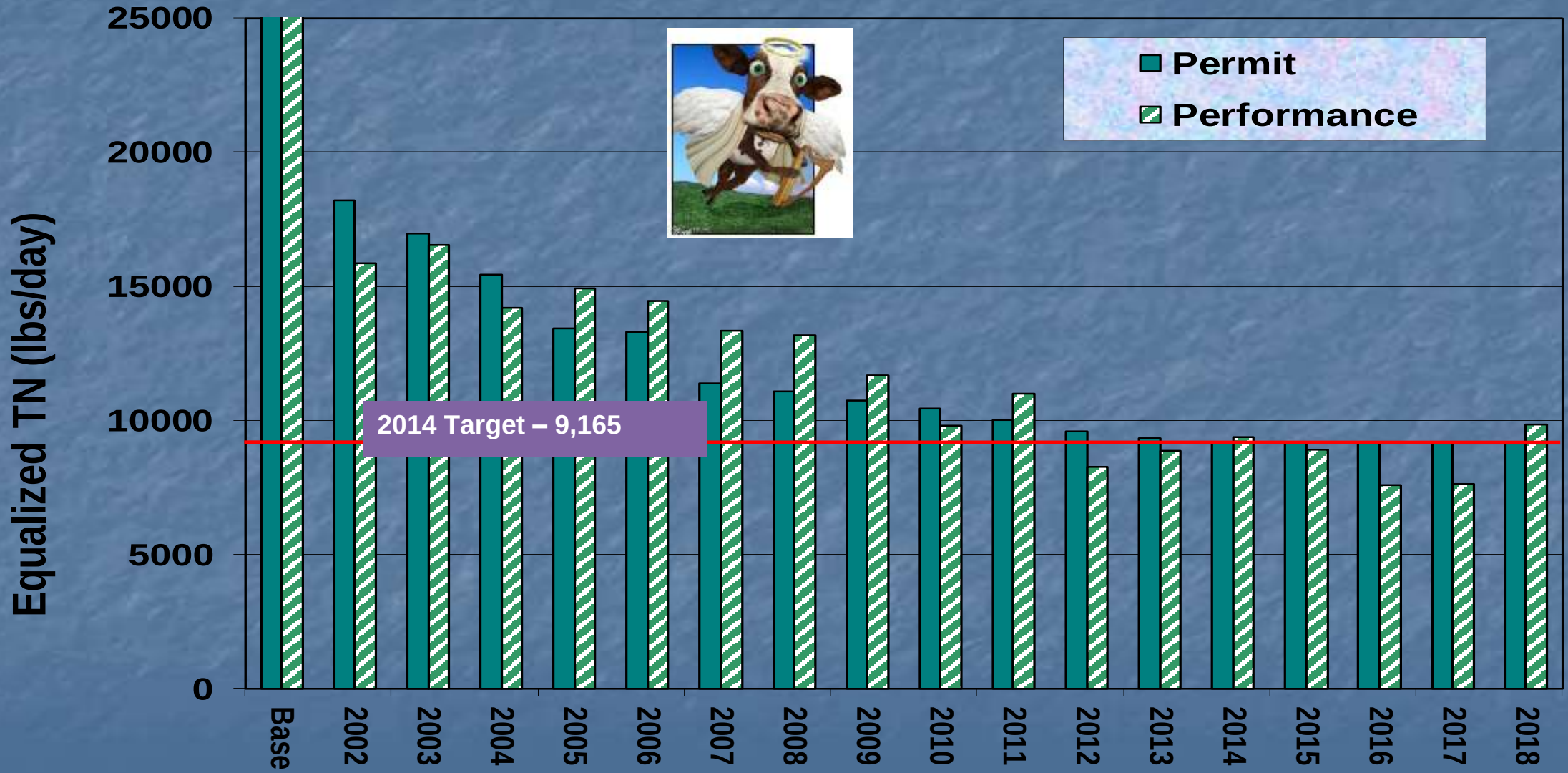


Figure 3. N



CT PROGRESS RELATIVE TO MEETING WASTELOAD ALLOCATION

Data: CT DEEP, NCE



CONCLUSIONS

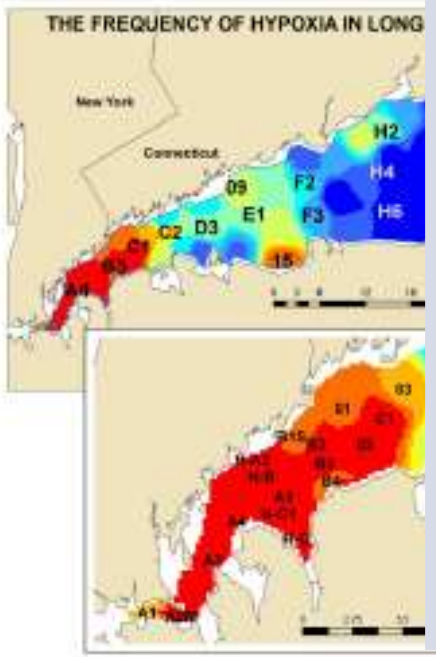
- Point Source Trading Proven Effective
  - Accelerated Progress
  - Reduced Cost
  - Enhanced Intermunicipal Cooperation
  - Strong Local and Political Support
- Adding NPS/SW trading would be challenging
  - New Growth
  - BMP Efficiencies
  - BMP Application Rate
  - Cost
  - Accountability/Tracking/Monitoring
- Nutrient criteria might limit trading feasibility because of high demand – low supply

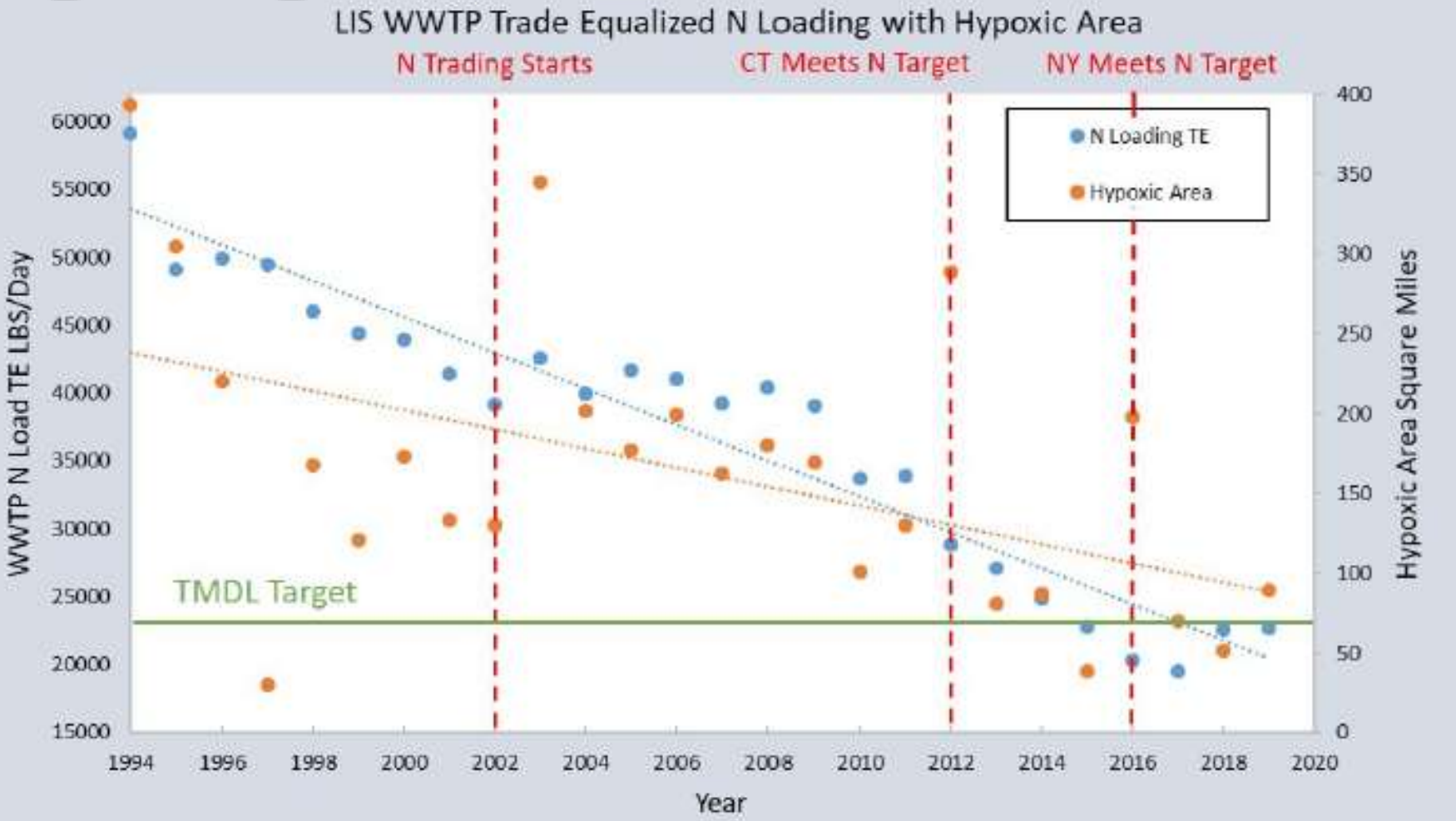
Estimated Savings: $300 – 400 M

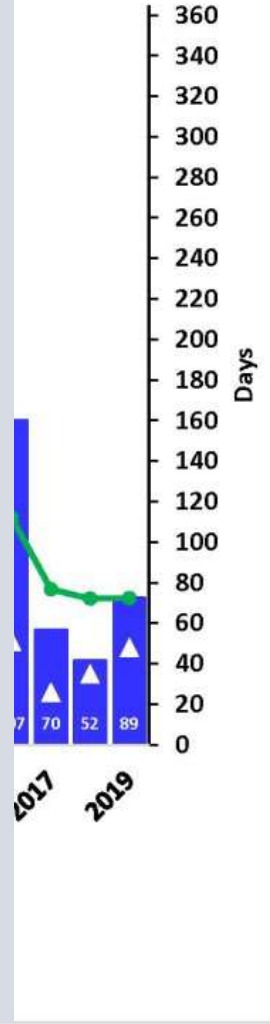
Monitoring Progress

2019 Long

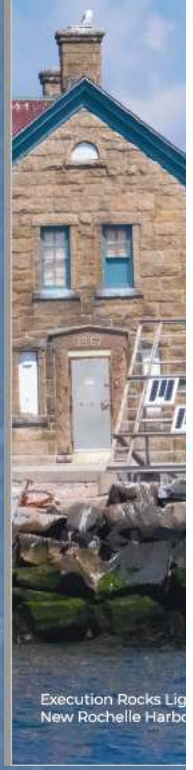
Hypoxia Se







Stakeholder/Public Involvement



Download your copy of the NEW 2020 Long Island Sound Report Card

A B C D F N/A

LEARN ABOUT GRADES

Search...

INDICATORS

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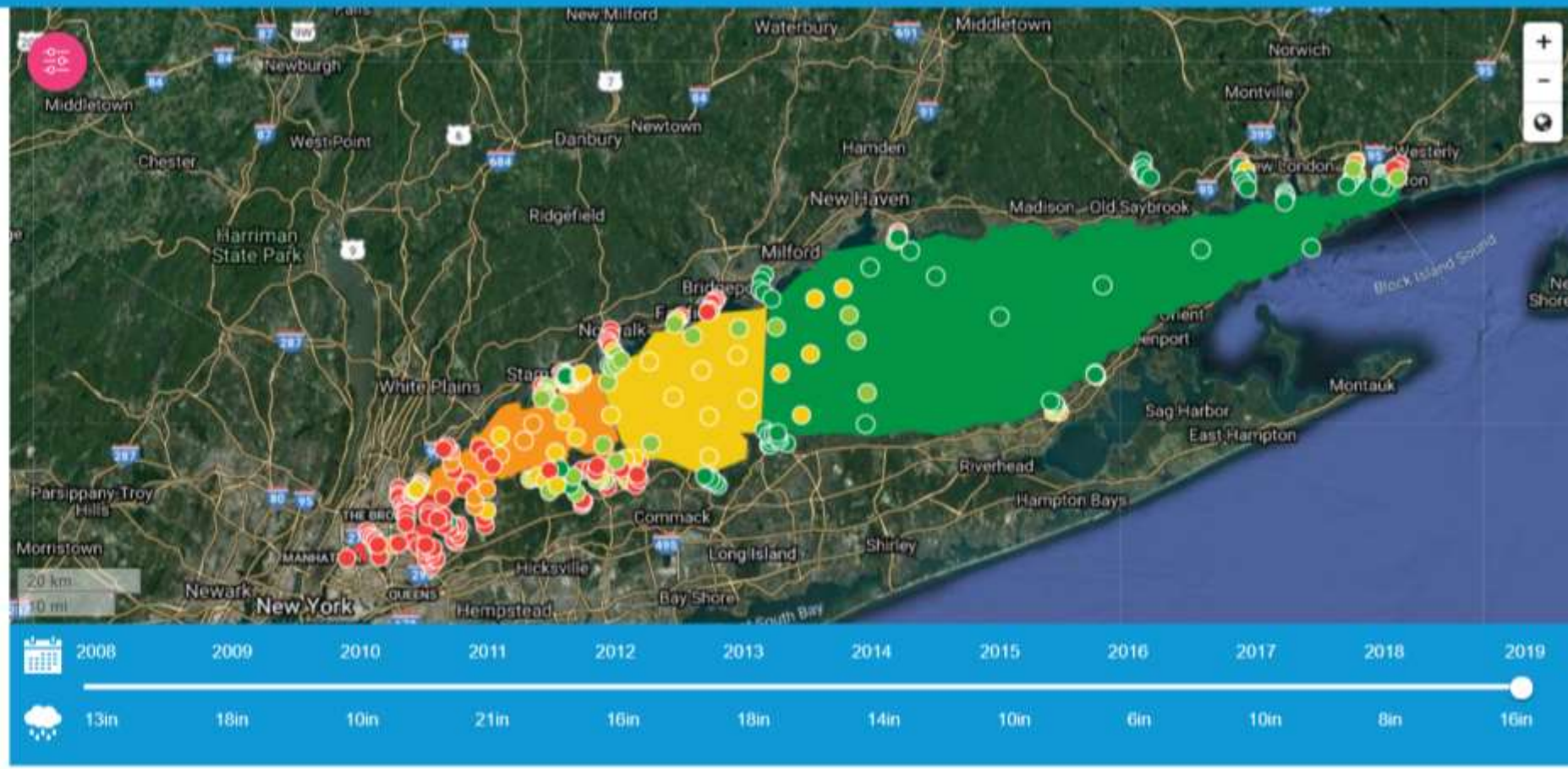
- Dissolved Organic Carbon
- Dissolved Oxygen
- Water Clarity
- Chlorophyll *a*
- Seaweeds
- Oxygen Saturation

MAP LAYERS



Did it Catch On?

Conclusion

Water quality trading (WQT) offers a promising approach to controlling pollutants from multiple sources that collectively impact water quality conditions.

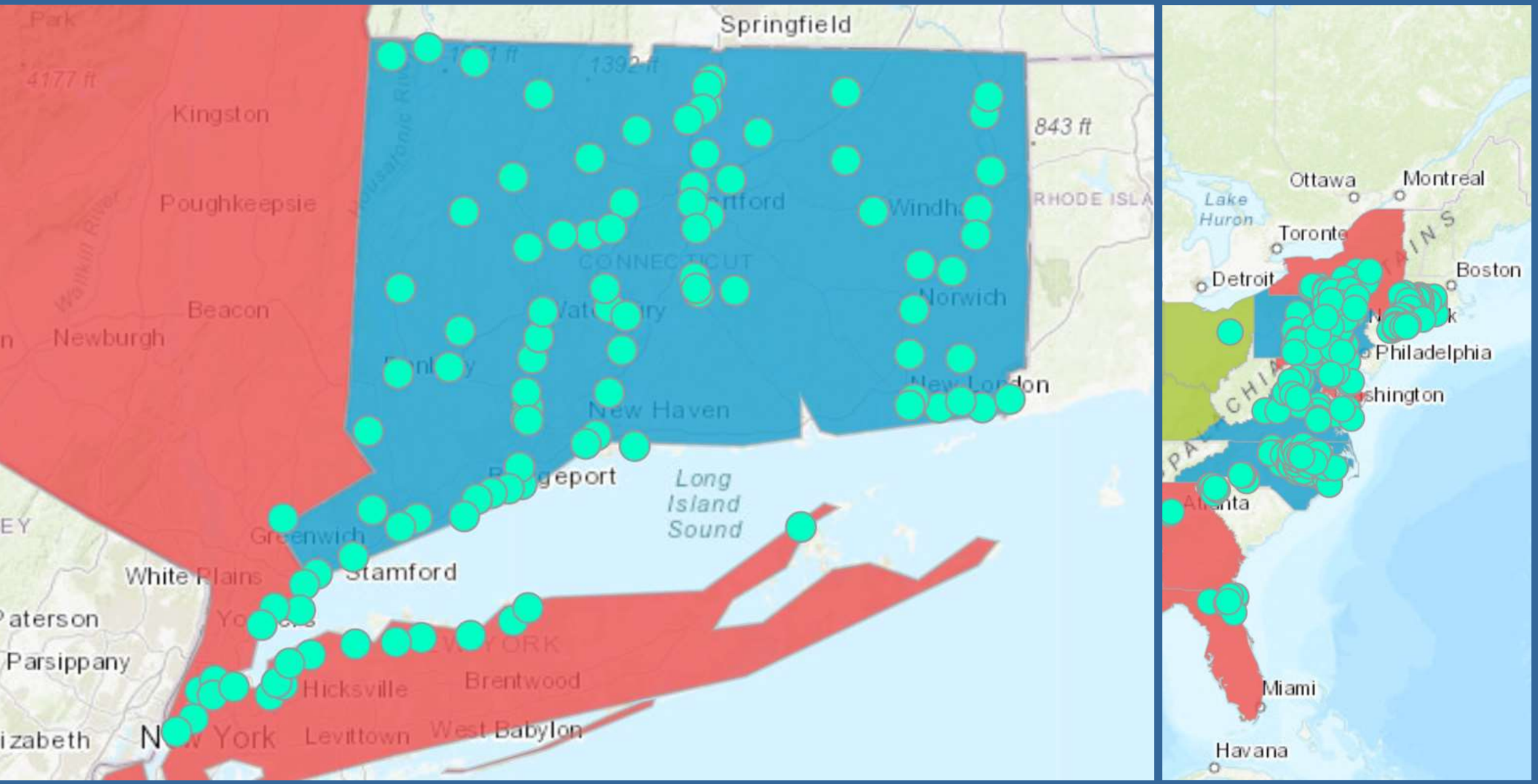
BUT

Despite the theoretical promise of water quality trading and EPA's efforts, however, WQT to date has met with limited practical success. Only 100 facilities have participated in trading, and *80 percent of trades have occurred within a single trading program*.

Invest in replicating the success of the Long Island Sound program. (CT Nitrogen Credit Exchange)

EXHIBIT 3: PROGRAMS SELECTED FOR WATER QUALITY TRADING EVALUATION

WATERBODY	PROGRAM NAME	STATE	POLLUTANT(S)	YEAR LAUNCHED	PROGRAM TYPE	MARKET STRUCTURE
Chatfield Reservoir	Chatfield	CO	Phosphorous	1999	Case-by-Case	Clearinghouse or Bilateral Negotiations
Great Miami River, Mad River, Stillwater River	Ohio River Basin Trading/Great Miami River Watershed Trading Pilot	OH	Phosphorous & Nitrogen	2006	Open Market	Third Party Broker
Long Island Sound	Long Island Sound Trading Program	CT	Nitrogen	2002	Cap and Trade	Exchange
Lower Boise River	Lower Boise	ID	Phosphorous	1997	Open Market	Bilateral Negotiations
Middle-Snake River	Middle-Snake River Demonstration Project	ID	Phosphorous	2001	Cap and Trade	Bilateral Negotiations
Minnesota River	Southern Minnesota Beet Sugar Cooperative Permit	MN	Phosphorous	1999	Case-by-Case	Sole Source Offsets
Minnesota River	Rahr Malting Phosphorous Offset	MN	Phosphorous, Nitrogen, Sediment, CBOD	1997	Case-by-Case	Sole Source Offsets
Neuse River	Total Nitrogen Trading in the Neuse River Basin	NC	Nitrogen	1998	Cap and trade	Clearinghouse for non-point source offsets; bilateral negotiations for point/point trades
Red Cedar River	Red Cedar River Nutrient Trading Pilot Program	WI	Phosphorous	1997	Case by Case	Bilateral Negotiations
Sudbury River	Wayland Center	MA	Phosphorous	1998	Case-by Case	Does not fit any market models
Truckee River	Truckee Meadows	NV	Nitrogen, Phosphorus, Dissolved solids	(Unclear)	Point/point: bilateral negotiations; point/nonpoint: not yet determined	Does not fit any market models


Springfield
Kingston
Poughkeepsie
Beacon
Newburgh
Norwich
New Haven
Long Island Sound
Greenwich
Stamford
White Plains
Hicksville
Brentwood
Levittown
West Babylon
Parsippany
Ottawa
Montreal
Toronto
Detroit
Boston
Philadelphia
Miami
Havana
Lake Huron

Why GAO Did This Study

Nutrient pollution—caused by excess nitrogen and phosphorus entering water bodies—poses significant risks to the nation's water quality.

This report describes

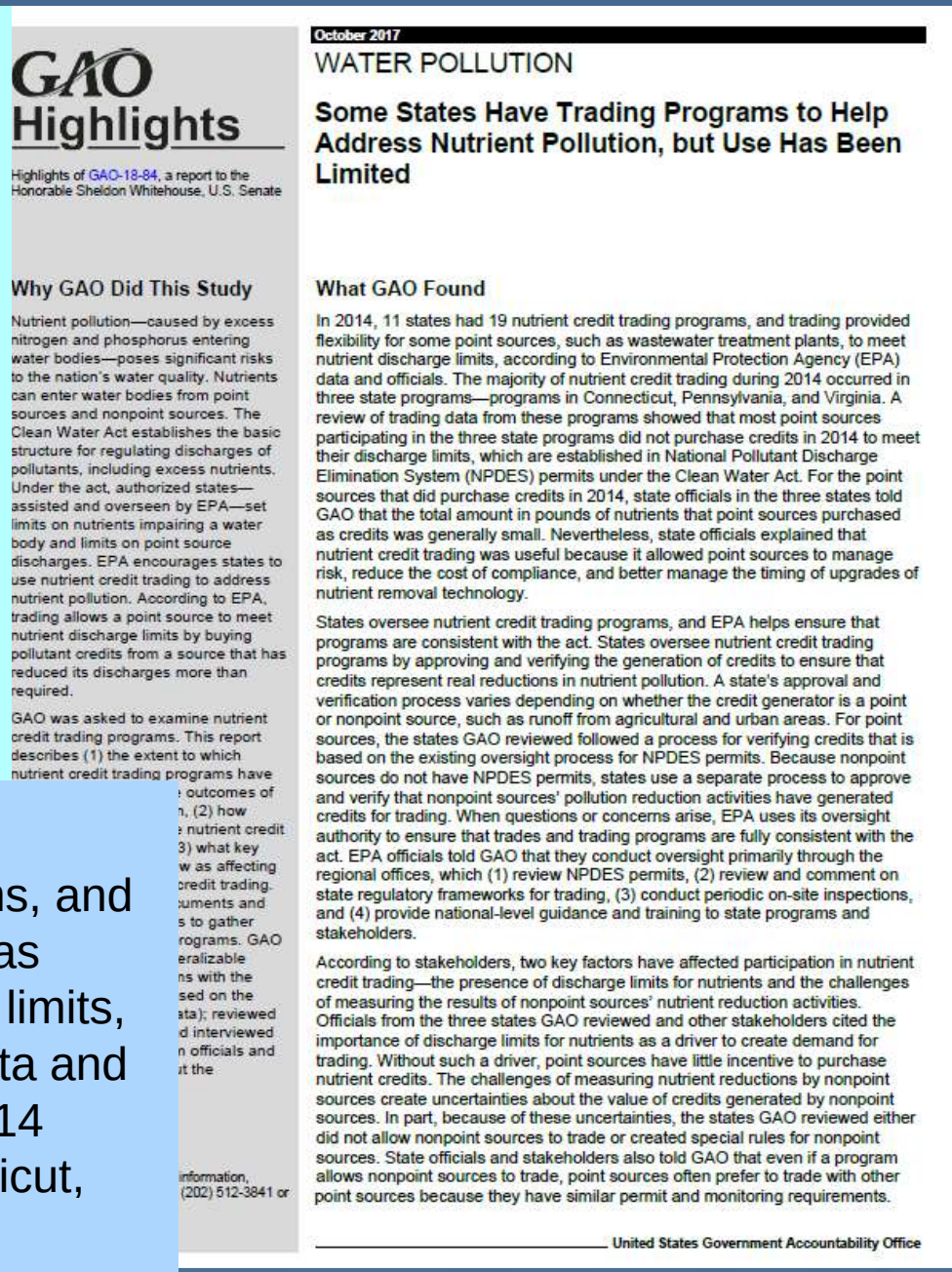
(1) the extent to which nutrient credit trading programs have been used and what the outcomes of the programs have been,

(2) how states and EPA oversee nutrient credit trading programs, and

(3) what key factors stakeholders view as affecting participation in nutrient credit trading.

What GAO Found

In 2014, 11 states had 19 nutrient credit trading programs, and trading provided flexibility for some point sources, such as wastewater treatment plants, to meet nutrient discharge limits, according to Environmental Protection Agency (EPA) data and officials. The majority of nutrient credit trading during 2014 occurred in three state programs—programs in Connecticut, Pennsylvania, and Virginia.



GAO Highlights

Highlights of GAO-18-84, a report to the Honorable Sheldon Whitehouse, U.S. Senate

Why GAO Did This Study

Nutrient pollution—caused by excess nitrogen and phosphorus entering water bodies—poses significant risks to the nation's water quality. Nutrients can enter water bodies from point sources and nonpoint sources. The Clean Water Act establishes the basic structure for regulating discharges of pollutants, including excess nutrients. Under the act, authorized states—assisted and overseen by EPA—set limits on nutrients impairing a water body and limits on point source discharges. EPA encourages states to use nutrient credit trading to address nutrient pollution. According to EPA, trading allows a point source to meet nutrient discharge limits by buying pollutant credits from a source that has reduced its discharges more than required.

GAO was asked to examine nutrient credit trading programs. This report describes (1) the extent to which nutrient credit trading programs have

October 2017

WATER POLLUTION

Some States Have Trading Programs to Help Address Nutrient Pollution, but Use Has Been Limited

What GAO Found

In 2014, 11 states had 19 nutrient credit trading programs, and trading provided flexibility for some point sources, such as wastewater treatment plants, to meet nutrient discharge limits, according to Environmental Protection Agency (EPA) data and officials. The majority of nutrient credit trading during 2014 occurred in three state programs—programs in Connecticut, Pennsylvania, and Virginia. A review of trading data from these programs showed that most point sources participating in the three state programs did not purchase credits in 2014 to meet their discharge limits, which are established in National Pollutant Discharge Elimination System (NPDES) permits under the Clean Water Act. For the point sources that did purchase credits in 2014, state officials in the three states told GAO that the total amount in pounds of nutrients that point sources purchased as credits was generally small. Nevertheless, state officials explained that nutrient credit trading was useful because it allowed point sources to manage risk, reduce the cost of compliance, and better manage the timing of upgrades of nutrient removal technology.

States oversee nutrient credit trading programs, and EPA helps ensure that programs are consistent with the act. States oversee nutrient credit trading programs by approving and verifying the generation of credits to ensure that credits represent real reductions in nutrient pollution. A state's approval and verification process varies depending on whether the credit generator is a point or nonpoint source, such as runoff from agricultural and urban areas. For point sources, the states GAO reviewed followed a process for verifying credits that is based on the existing oversight process for NPDES permits. Because nonpoint sources do not have NPDES permits, states use a separate process to approve and verify that nonpoint sources' pollution reduction activities have generated credits for trading. When questions or concerns arise, EPA uses its oversight authority to ensure that trades and trading programs are fully consistent with the act. EPA officials told GAO that they conduct oversight primarily through the regional offices, which (1) review NPDES permits, (2) review and comment on state regulatory frameworks for trading, (3) conduct periodic on-site inspections, and (4) provide national-level guidance and training to state programs and stakeholders.

According to stakeholders, two key factors have affected participation in nutrient credit trading—the presence of discharge limits for nutrients and the challenges of measuring the results of nonpoint sources' nutrient reduction activities. Officials from the three states GAO reviewed and other stakeholders cited the importance of discharge limits for nutrients as a driver to create demand for trading. Without such a driver, point sources have little incentive to purchase nutrient credits. The challenges of measuring nutrient reductions by nonpoint sources create uncertainties about the value of credits generated by nonpoint sources. In part, because of these uncertainties, the states GAO reviewed either did not allow nonpoint sources to trade or created special rules for nonpoint sources. State officials and stakeholders also told GAO that even if a program allows nonpoint sources to trade, point sources often prefer to trade with other point sources because they have similar permit and monitoring requirements.

United States Government Accountability Office

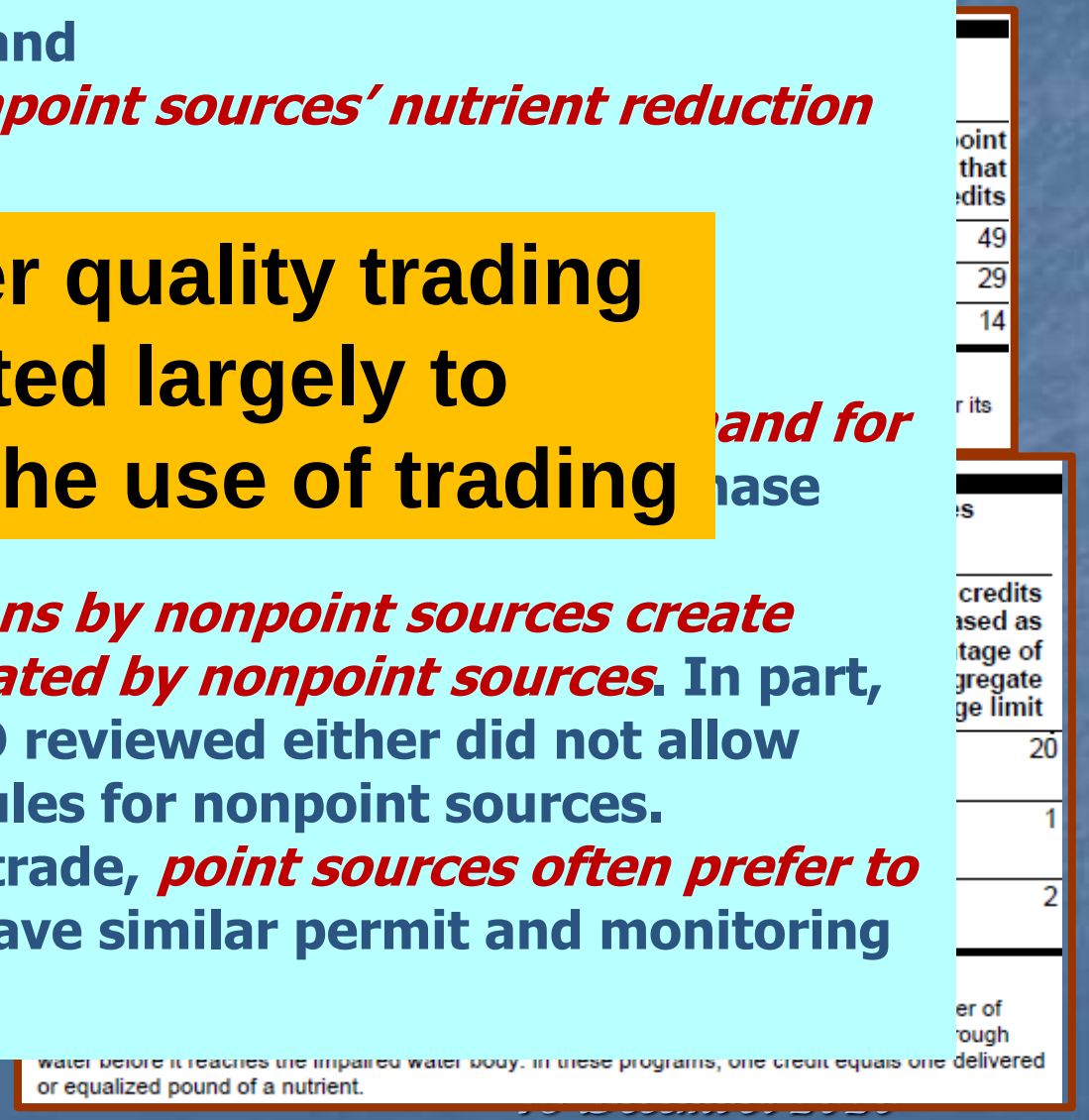
According to stakeholders, two key factors have affected participation in nutrient credit trading:

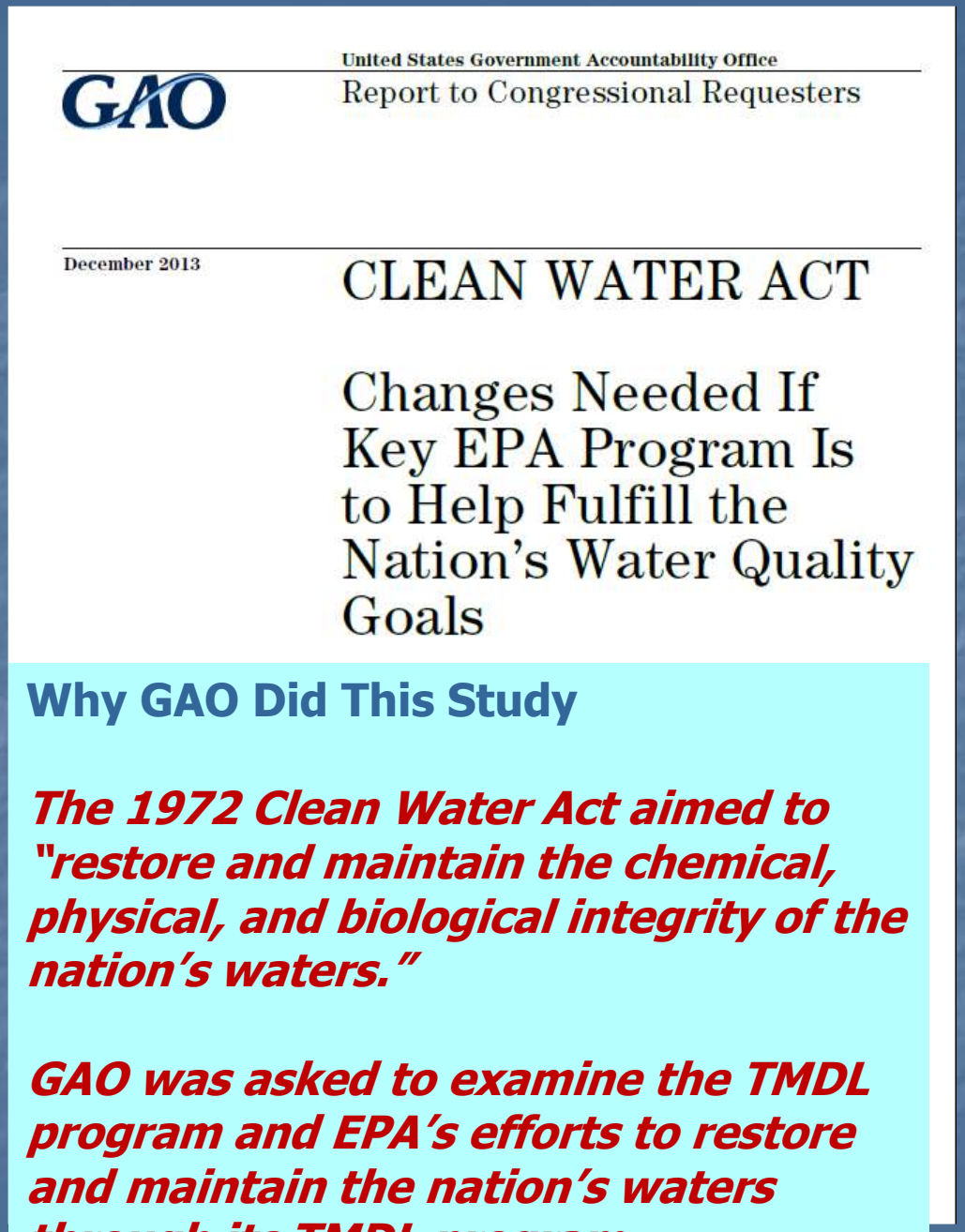
- The presence of ***discharge limits for nutrients*** and
- The challenges of ***measuring the results of nonpoint sources' nutrient reduction activities***.

The limited activity in water quality trading nationwide was attributed largely to uncertainties surrounding the use of trading

Officia

- ***The*** ***and for trac*** **nase nutrient credits.**
- ***The challenges of measuring nutrient reductions by nonpoint sources create uncertainties about the value of credits generated by nonpoint sources***. **In part, because of these uncertainties, the states GAO reviewed either did not allow nonpoint sources to trade or created special rules for nonpoint sources.**
- **Even if a program allows nonpoint sources to trade, *point sources often prefer to trade with other point sources* because they have similar permit and monitoring requirements.**





Why GAO Did This Study

The 1972 Clean Water Act aimed to "restore and maintain the chemical, physical, and biological integrity of the nation's waters."

GAO was asked to examine the TMDL program and EPA's efforts to restore and maintain the nation's waters through its TMDL program.

What GAO Found

- Of about 50,000 TMDLs developed and approved, nearly 35,000 were approved more than 5 years ago, long enough for GAO to consider them long established. State officials

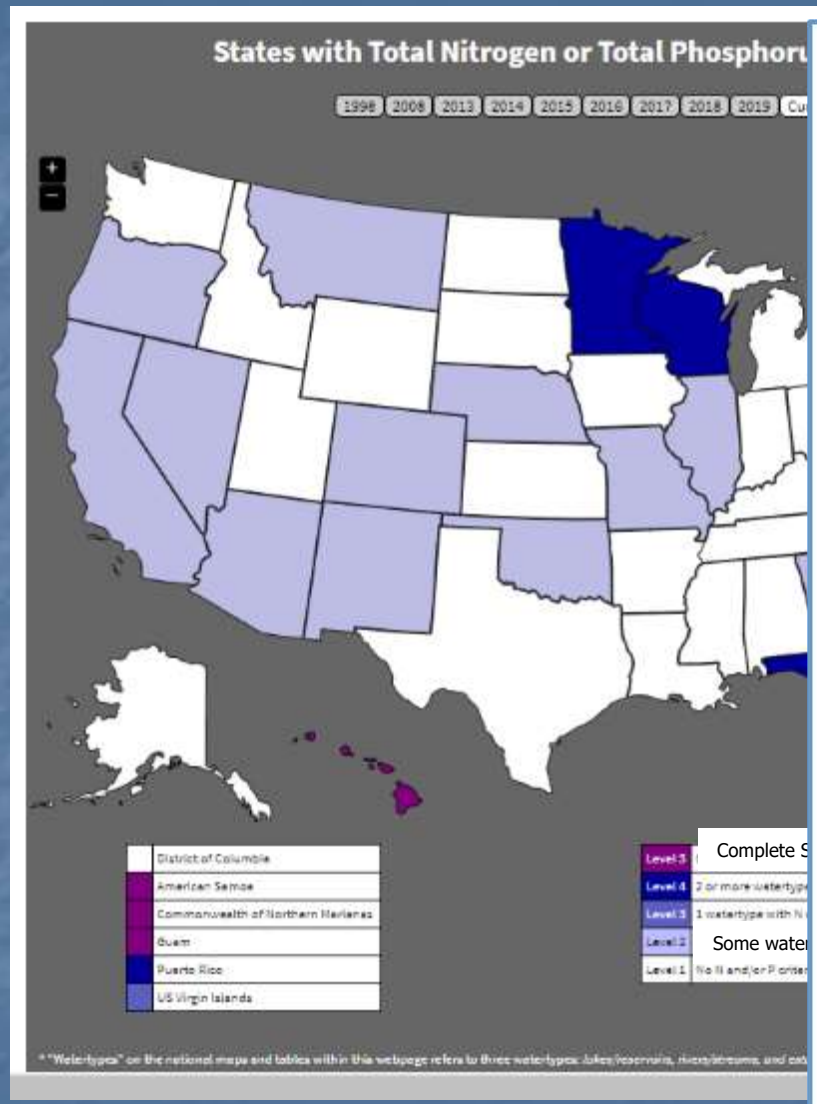
What GAO Recommends

- GAO recommends that EPA issue new regulations for TMDL development, adding key features.
- Further, Congress should consider revising the Clean Water Act's approach to addressing nonpoint source pollution.
- EPA did not comment on the matter for Congress. The agency agreed with the need to add key features to TMDLs but did not agree to issue new regulations.
- GAO believes new regulations are needed.

TRADING FUNDAMENTALS

	PT - PT	PT – NPS/SW
Common water quality problem	YES	YES
Technically feasible to meet pollutant reduction target	YES	UNCERTAIN
Compelling member benefits, especially economic	YES	**PT to NPS/SW**
Ability to quantify and track pollutant loads	YES	**Difficult & Costly**
Credit costs based upon agreed protocols	YES	YES
Diverse market, viable supply and demand	YES	NO
Reduce overall cost	YES	**PT to NPS/SW**
Transaction costs low relative to price	YES	NO

Nutrient Criteria Adoption Status

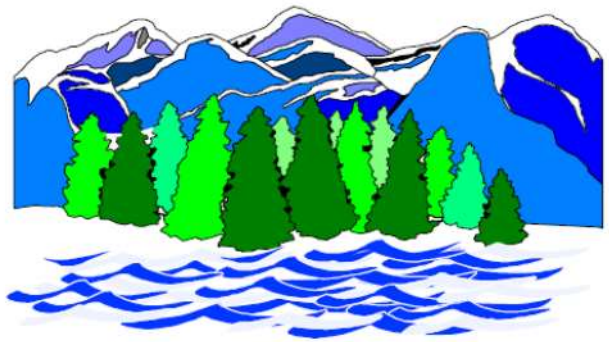


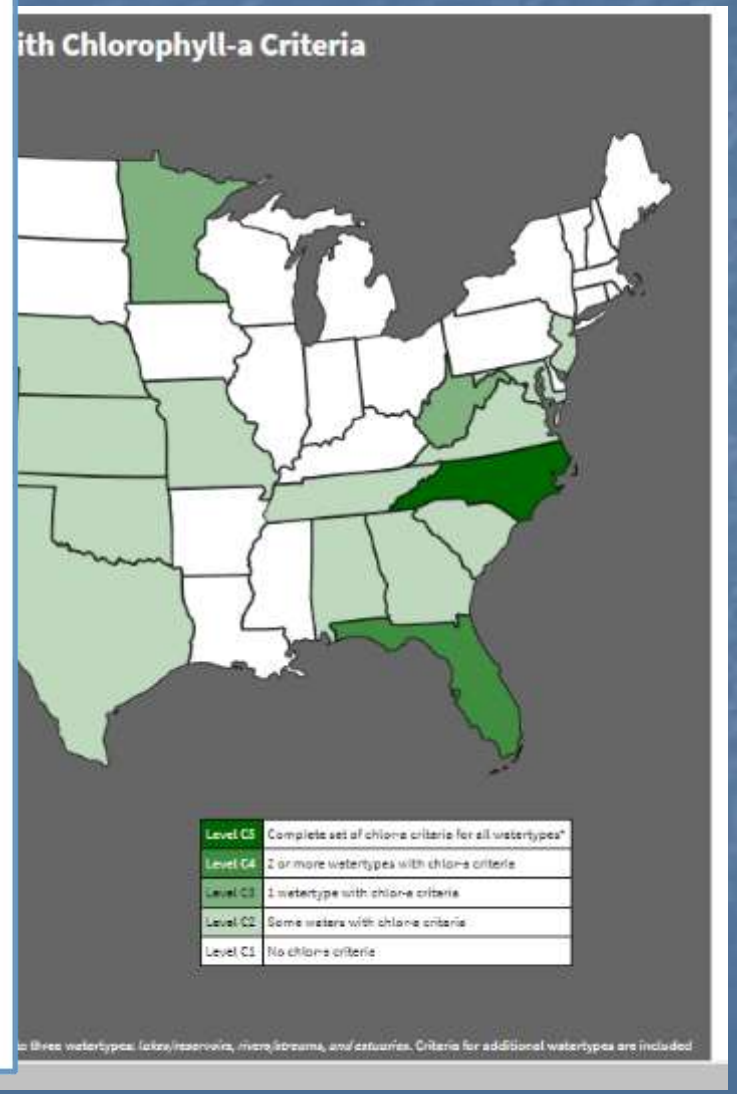
United States Environmental Protection Agency | Office of Water 4304 | EPA 822-R-98-002 June 1998

EPA

National Strategy for the Development of Regional Nutrient Criteria

June 1998





Willamette Partnership, World Resources Institute, and the National Network on Water Quality Trading. 2015.

Guiding Principles for Success

- Accomplish Regulatory and Environmental Goals
- Based on Sound Science
- Sufficient Accountability, Transparency, Accessibility, Public Participation to Ensure Benefits are Delivered
- Produce No Localized Water Quality Problems
- Consistent with the CWA
- Compliance and Enforcement to Ensure Long-term Success

Water Quality Trading Programs: Potential & Key Dilemmas

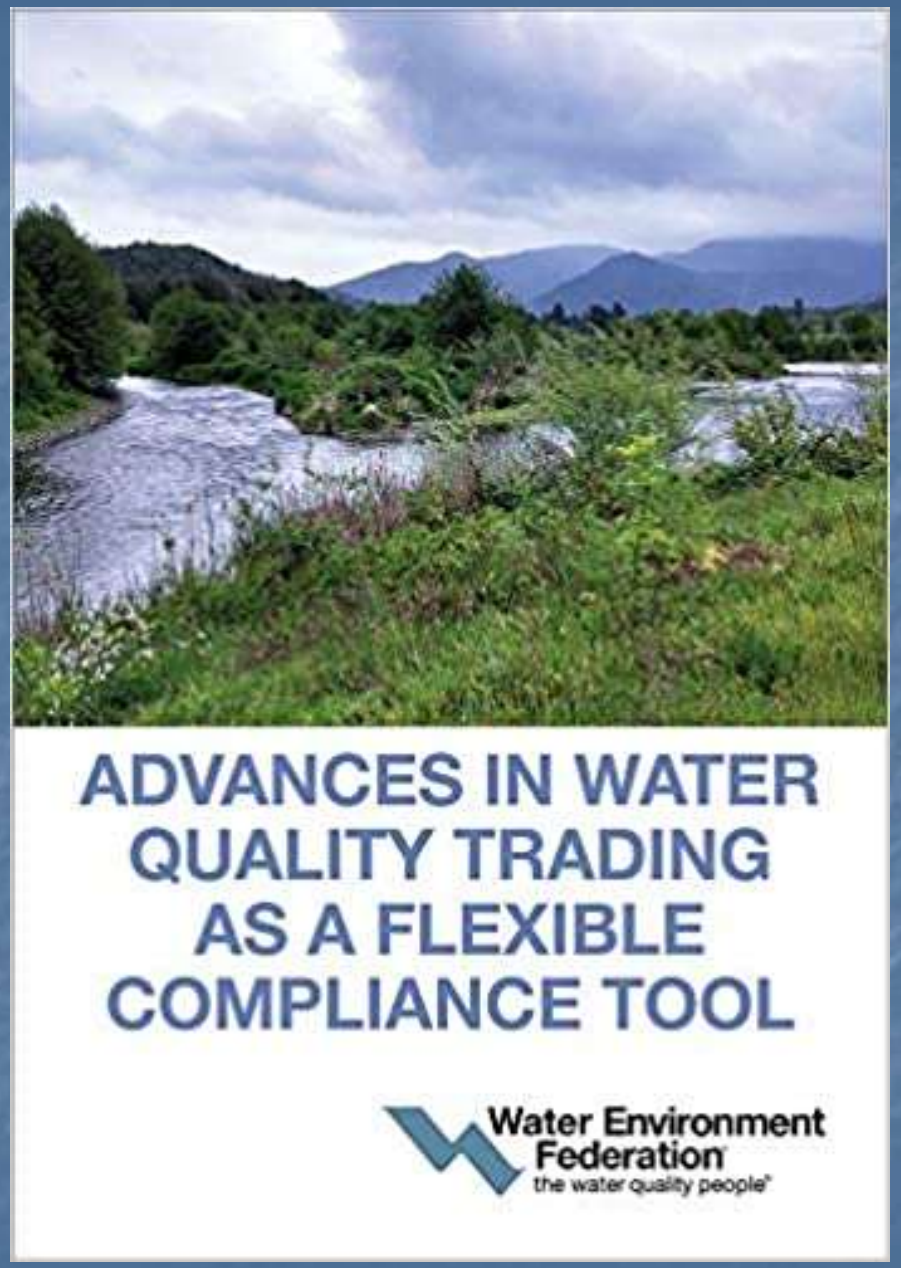
- The Clean Water Act ***does not apply evenly to all sources of pollution within a watershed***, generating debate about ***who is responsible for reducing what pollution and when***;
- ***Where watershed science is incomplete***, it can be difficult to build an effective, efficient WQT program. It can be more ***challenging to set clear water quality goals*** and determine the ***contribution of individual projects toward those goals***;
- A successful trading program ***involves multiple stakeholders who bring different perspectives and vocabularies***. The lack of a common vocabulary can hinder communication and development of shared understanding;

Willamette Partnership, World Resources Institute, and the National Network on Water Quality Trading. 2015.

Water Quality Trading Programs: Potential & Key Dilemmas

- Different stakeholders have different ***tolerances for risk and uncertainty***. There needs to be ***a holistic look at risk management*** in WQT. If every program design decision is the ***lowest risk option*** from an ecological perspective, WQT ***may not be cost effective***. Conversely, if every decision ***entails ecological risk***, WQT ***may not achieve water quality objectives***;
- It can be easy to ***lose sight of the bigger water quality vision*** when talking about the details of a WQT program, but talking about WQT at a high level ***without going into detail may limit confidence*** in a program's ability to succeed; and
- There are ***no easy ways to share the lessons learned*** from two decades of experience with new trading programs, so opportunities for reducing start-up costs and effort may be lost.

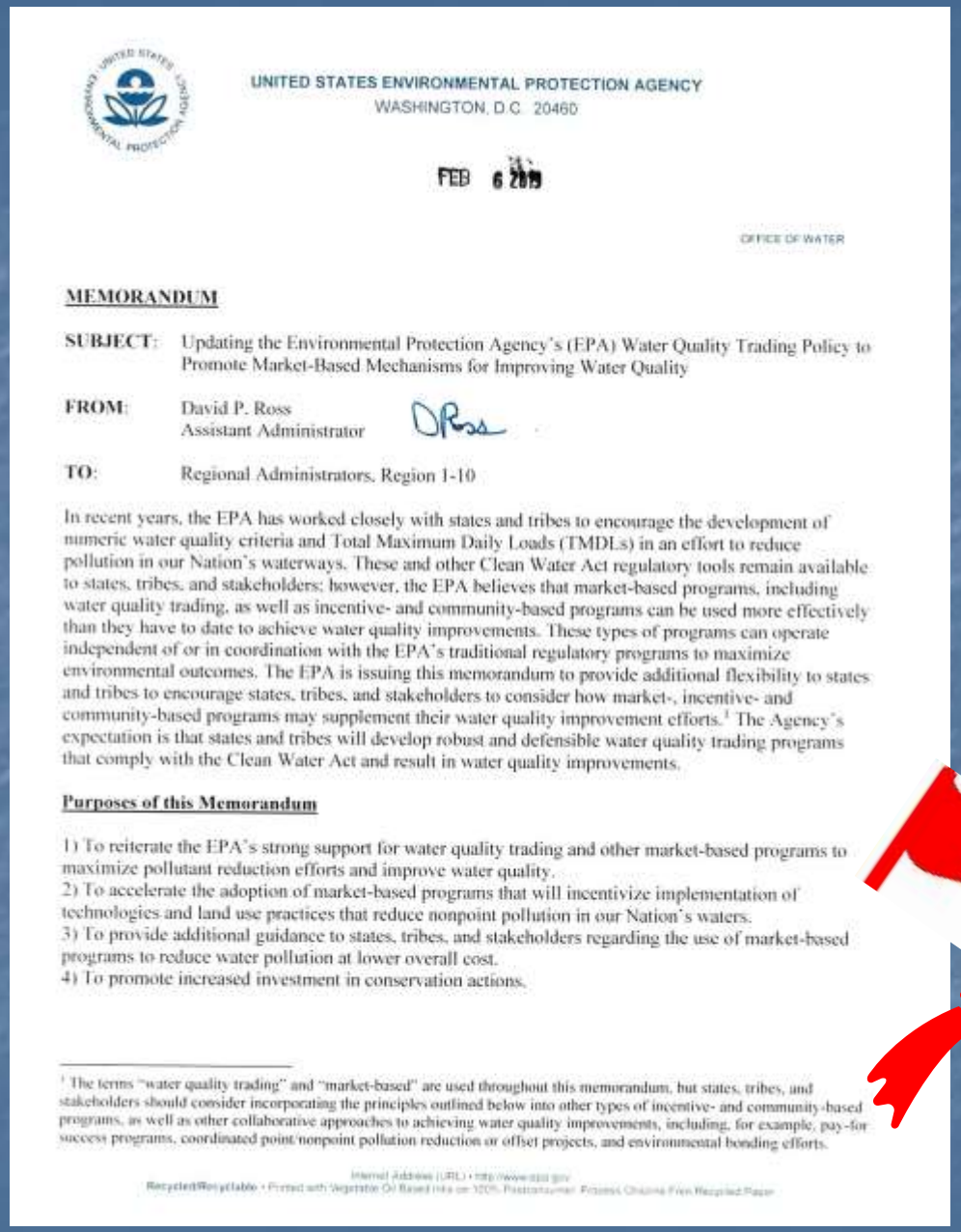
Willamette Partnership, World Resources Institute, and the National Network on Water Quality Trading. 2015.



The Future of Water Quality Trading

- Great strides have been made in water quality improvement across the US by focusing on individual pollutants and individual sources, sometimes [often] ***without an eye on the overall integrity and health of the watershed and its water quality goals***

- ***The future of WQT will focus on the goal of the CWA*** – to protect and restore the chemical, physical, and biological integrity of the waters of the United States



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

FEB 6 2019

OFFICE OF WATER

MEMORANDUM

SUBJECT: Updating the Environmental Protection Agency's (EPA) Water Quality Trading Policy to Promote Market-Based Mechanisms for Improving Water Quality

FROM: David P. Ross
Assistant Administrator

TO: Regional Administrators, Region 1-10

In recent years, the EPA has worked closely with states and tribes to encourage the development of numeric water quality criteria and Total Maximum Daily Loads (TMDLs) in an effort to reduce pollution in our Nation's waterways. These and other Clean Water Act regulatory tools remain available to states, tribes, and stakeholders; however, the EPA believes that market-based programs, including water quality trading, as well as incentive- and community-based programs can be used more effectively than they have to date to achieve water quality improvements. These types of programs can operate independent of or in coordination with the EPA's traditional regulatory programs to maximize environmental outcomes. The EPA is issuing this memorandum to provide additional flexibility to states and tribes to encourage states, tribes, and stakeholders to consider how market-, incentive- and community-based programs may supplement their water quality improvement efforts.[1] The Agency's expectation is that states and tribes will develop robust and defensible water quality trading programs that comply with the Clean Water Act and result in water quality improvements.

Purposes of this Memorandum

1) To reiterate the EPA's strong support for water quality trading and other market-based programs to maximize pollutant reduction efforts and improve water quality.
2) To accelerate the adoption of market-based programs that will incentivize implementation of technologies and land use practices that reduce nonpoint pollution in our Nation's waters.
3) To provide additional guidance to states, tribes, and stakeholders regarding the use of market-based programs to reduce water pollution at lower overall cost.
4) To promote increased investment in conservation actions.

[1] The terms "water quality trading" and "market-based" are used throughout this memorandum, but states, tribes, and stakeholders should consider incorporating the principles outlined below into other types of incentive- and community-based programs, as well as other collaborative approaches to achieving water quality improvements, including, for example, pay-for success programs, coordinated point/nonpoint pollution reduction or offset projects, and environmental bonding efforts.

Internet Address (URL) • http://www.epa.gov
Recycled/Recyclable • Printed with Vegetable Oil Based Inks on 100% Postconsumer Process Chlorine Free Recycled Paper

The Six Market-Based Principles

- States, tribes, and stakeholders should consider implementing water quality trading and other market-based programs on ***a watershed scale***
- The EPA encourages the use of ***adaptive management*** strategies for implementing market-based programs
- Water quality credits and offsets may be ***banked for future use***
- The EPA encourages ***simplicity and flexibility in implementing baseline concepts***
- A single project may ***generate credits for multiple markets***
- Financing opportunities exist to assist with deployment of nonpoint land use practices.

The major objectives will be to provide policy advice and recommendations on:

a. Policy issues associated with regulations, economics, and outreach/communications to address prevention of adverse health effects to children, and improve the breadth and depth of analyses related to these efforts;

b. Critical policy and technical issues relating to children's health.

EPA has determined that this federal advisory committee is in the public interest and will assist the EPA in performing its duties and responsibilities. Copies of the CHPAC's charter will be filed with the appropriate congressional committees and the Library of Congress.

The CHPAC expects to meet in person or by electronic means (e.g., telephone, videoconference, webcast, etc.) approximately two (2) times per year, or as needed and approved by the DFO. Meetings will be held in Washington, DC.

Membership: CHPAC will be composed of approximately eighteen to twenty-four (18–24) members who will generally serve as representatives of non-Federal interests. Nominations for membership will be solicited through the **Federal Register** and other sources. In selecting members, EPA will consider candidates representing a broad range of interests relating to children's health, including but not limited to, specific organizations, associations, or classes of individuals, Federal, State, local and Tribal governments, the regulated community, public interest groups, health care organizations and academic institutions. In selecting members, EPA will consider the differing perspectives and breadth of collective experience needed to address EPA's charge.

Dated: September 13, 2019.

Jeanne Briskin,

Director, Office of Children's Health Protection.

[FR Doc. 2019–20344 Filed 9–18–19; 8:45 am]

BILLING CODE 6560–50–P

ENVIRONMENTAL PROTECTION AGENCY

[EPA–HQ–OW–2019–0415; FRL–10000–02–OW]

Water Quality Trading Under The National Pollutant Discharge Elimination System Program

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notification, request for comment.

SUMMARY: The Environmental Protection Agency (EPA) is requesting comment on policy approaches for addressing ''baseline'' issues in watersheds with EPA-approved Total Maximum Daily Loads (TMDLs) where policy makers would like to pursue water quality trading as a regulatory option for National Pollutant Discharge Elimination System (NPDES) permit compliance. These policy approaches may also be of interest to stakeholders pursuing market-based water quality improvement programs outside of the NPDES permit program.

DATES: Comments must be received on or before November 18, 2019. A combined in-person and online listening session will be held at EPA Headquarters in Washington, DC on October 21, 2019, from 12 p.m. to 5 p.m. EDT.

ADDRESSES: The listening session will be held at the following location:

- US EPA Headquarters, William Jefferson Clinton East Building, Room 1153, 1201 Constitution Avenue NW, Washington, DC 20004;
- The online listening session will be accessible at *https://www.epa.gov/npdes/nonpoint-source-baselines-water-quality-trading.*

To register for the listening session, go to: https://www.epa.gov/npdes/nonpoint-source-baselines-water-quality-trading.

Submit your comments, identified by Docket ID No. EPA–HQ– OW–2019–0415, at *https://www.regulations.gov.* Follow the online instructions for submitting comments. Once submitted, comments cannot be edited or removed from *Regulations.gov.* The EPA may publish any comment received to its public docket. Do not submit electronically any information you consider to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. The EPA will generally not consider comments or comment contents located outside of the primary submission (*i.e.,* on the web, cloud, or other file sharing system). For additional submission methods, the full EPA public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit *https://www.epa.gov/dockets/commenting-epa-dockets.*

FOR FURTHER INFORMATION CONTACT: Amelia Letnes, Office of Wastewater Management, Water Permits Division, Mail Code 4203M, Environmental Protection Agency, 1200 Pennsylvania Ave. NW, Washington, DC 20460; telephone number: (202) 564–5627; email address: *letnes.amelia@epa.gov.*

SUPPLEMENTARY INFORMATION: This supplementary information section is organized as follows:

I. General Information

A. Does this action apply to me?

Entities potentially affected by this action are: Authorized NPDES states, territorial, and tribal programs; municipal and industrial point sources; and nonpoint sources of pollution. This table is not intended to be exhaustive; rather, it provides a guide for readers regarding entities that this action is likely to affect.

TABLE I–1—ENTITIES POTENTIALLY AFFECTED BY THIS ACTION

Category	Examples of potentially affected entities
The Environmental Protection Agency	The Environmental Protection Agency when acting as a permitting authority, conducting oversight, and enforcing permits.
State, Territorial, and Indian Tribal Governments	States and territories authorized to administer the National Pollutant Discharge Elimination System (NPDES) permitting program (permitting authorities); states, territories, and Indian tribes that provide certification under section 401 of the Clean Water Act (CWA); states, territories, and Indian tribes that own or operate treatment works.
Municipalities	Publicly Owned Treatment Works (POTWs), municipal separate storm sewer systems (MS4s), or other municipal entities required to apply for or seek coverage under an NPDES individual or general permit.

AGENCY

[EPA–HQ–OW–2019–0415; FRL–10000–02–

OW]

Water Quality Trading Under The National Pollutant Discharge Elimination System Program

AGENCY: Environmental Protection Agency (EPA).

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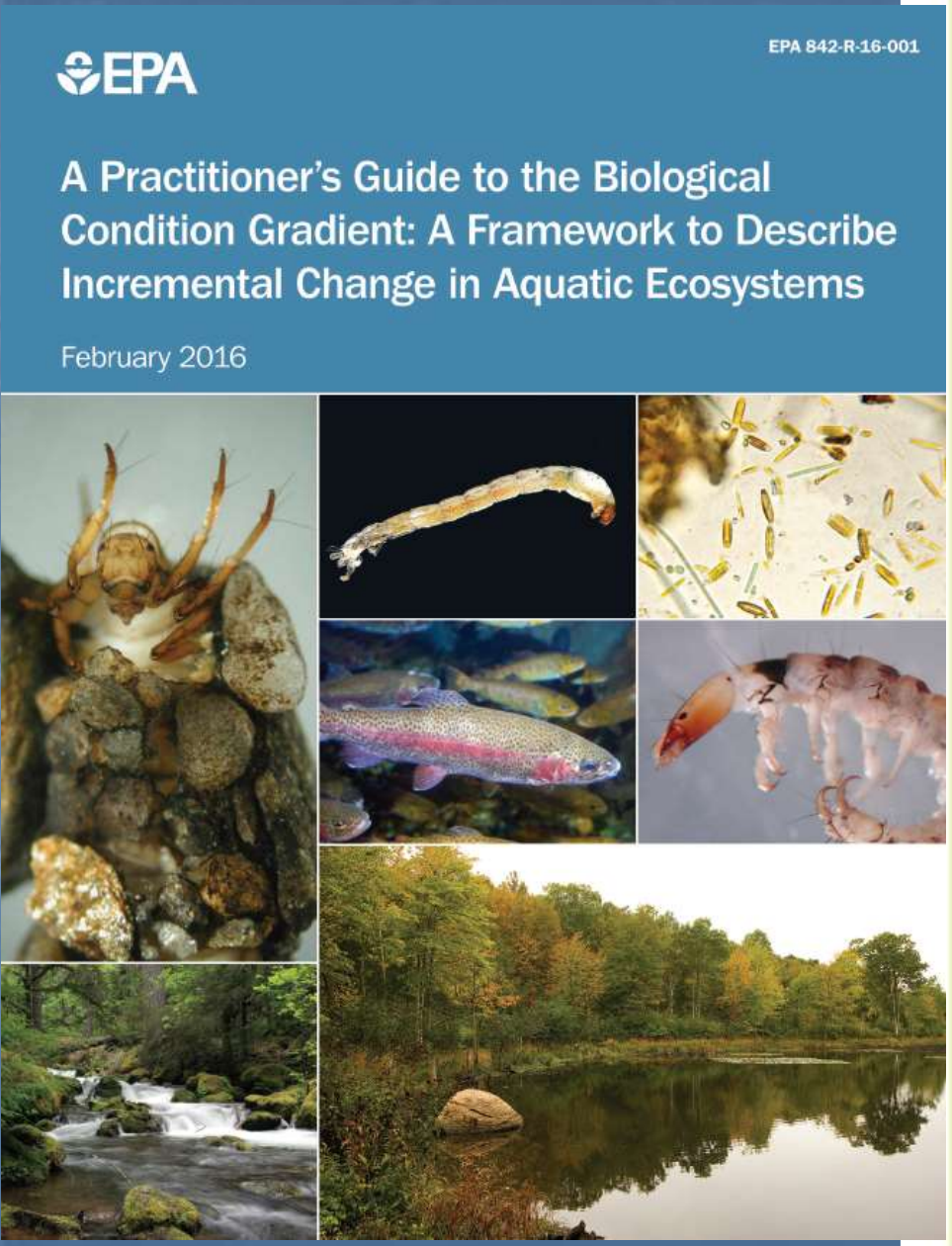
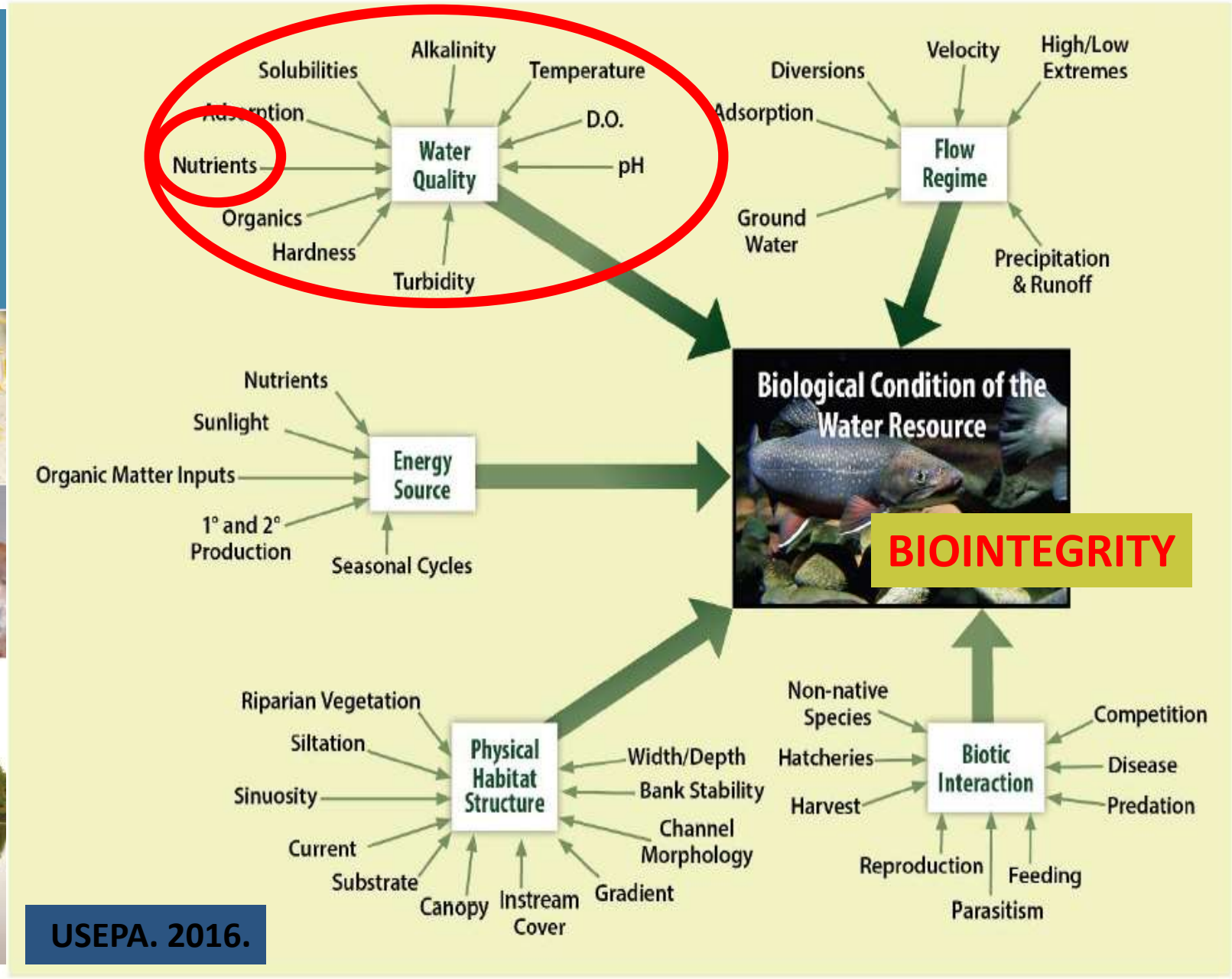
Paul's Picks

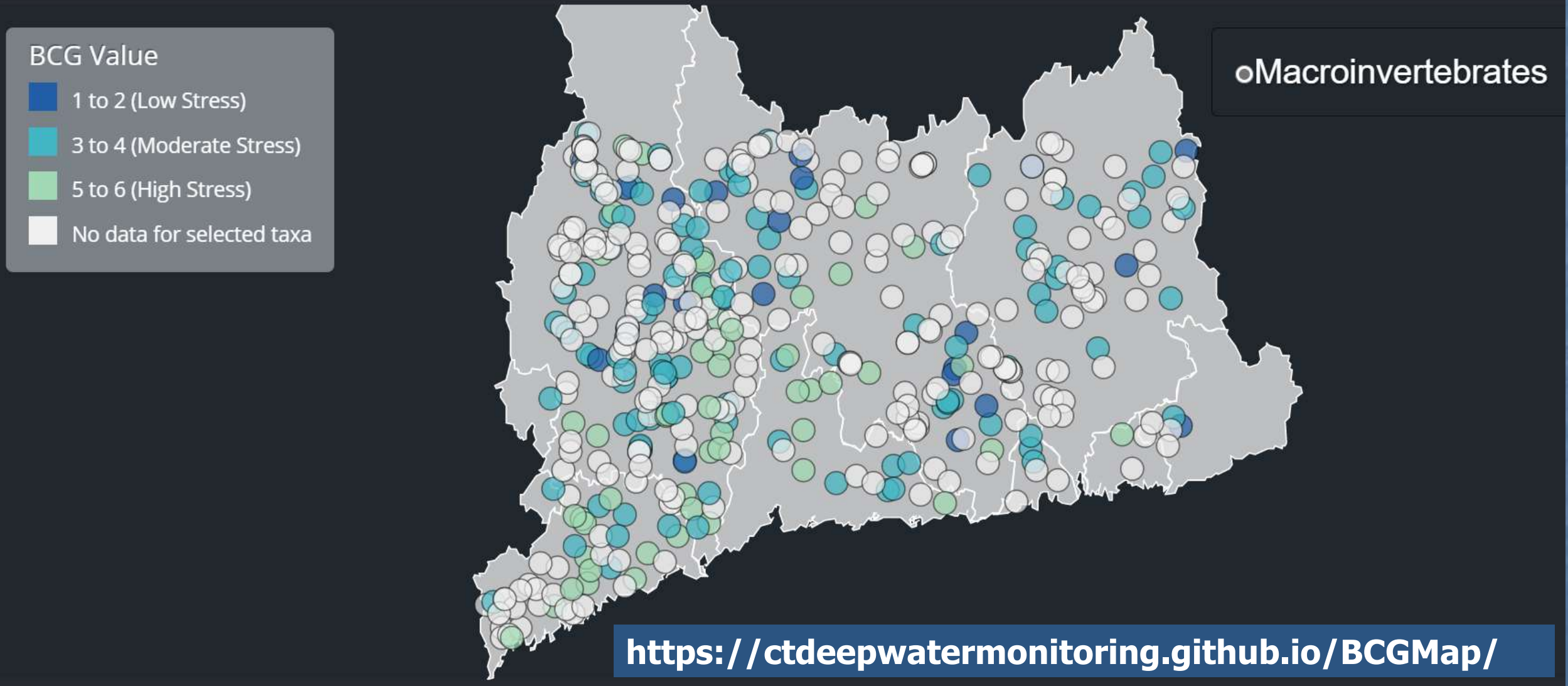
- Water Quality Trading has been unduly limited by policy constraints that focus on single-pollutants isolated in the narrow context of CWA and NPDES guidance, criteria and regulation, with uncertain ecosystem benefits.
- This narrow perspective precludes the integrated context of structurally and functionally sound watershed and aquatic ecosystems that could target, and meet, healthy ecosystem objectives of the CWA.
- Ecosystem health objectives broadly benefit human and environmental sustainability and provide ecosystem goods and services outcomes rather than single-pollutant regulatory attainment of uncertain consequence.
- Importantly, a universal, ecosystem-based management application could be applied at any scale, i.e., aimed towards solutions to site-specific impairments or expansive watershed planning for conservation and CWA goal attainment, and be consistent with water quality goals and objectives.
- Therefore, I recommend that EPA:
  - Engage in a thorough evaluation of WQT that would explore more robust alternatives to current structures, that provide market-based, ecosystem goods and services outcomes and benefits.
  - Consideration should be given to new approaches that integrate current regulatory and management structures and trading currencies.
  - These benefits derived from structurally and functionally sound ecosystems should employ management standards, criteria, and protocols consistent with the CWA overarching objective to: Restore and maintain the chemical, physical and biological integrity of the Nation's waters.

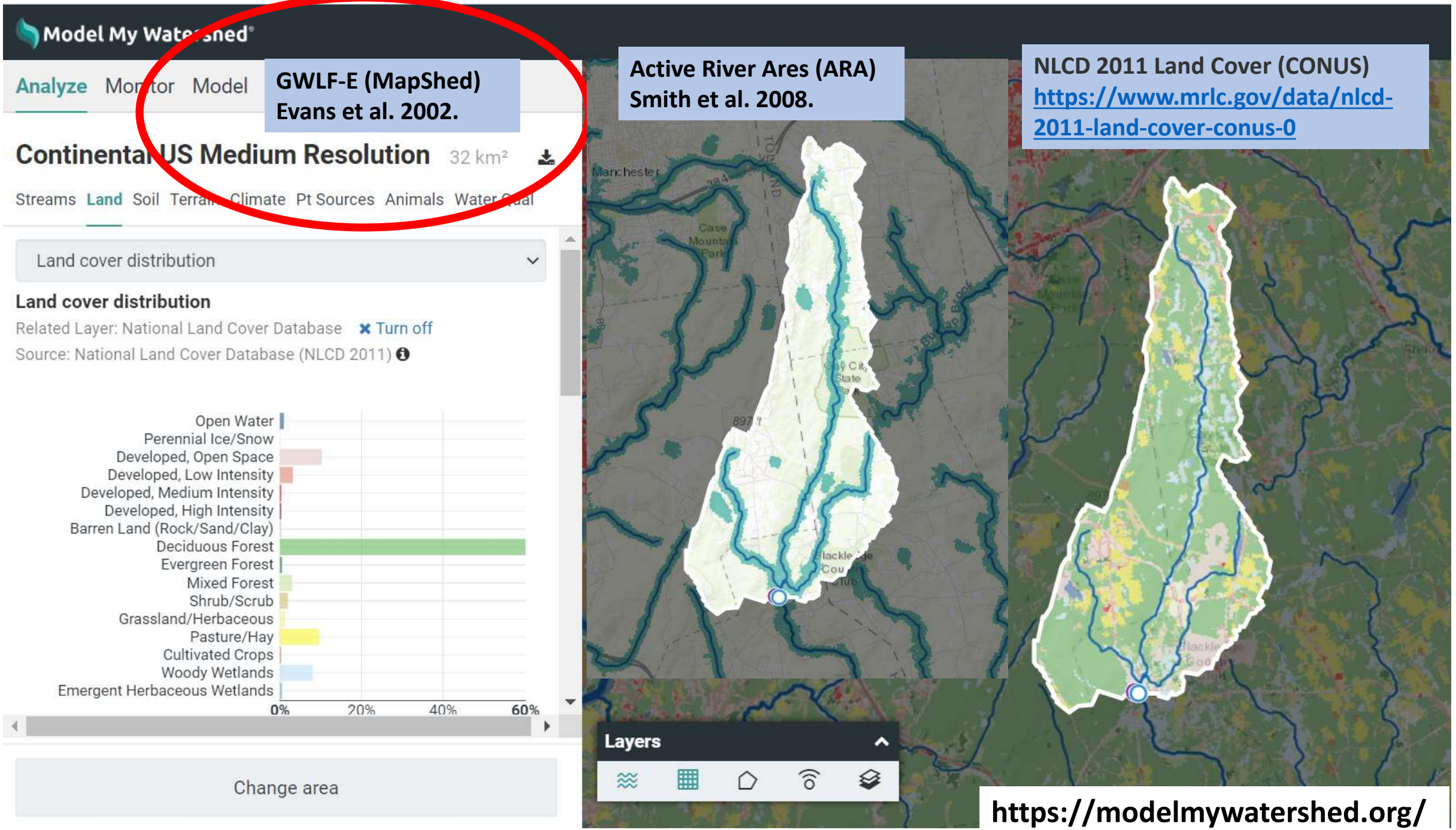
Five Major Factors that Determine Biological Condition

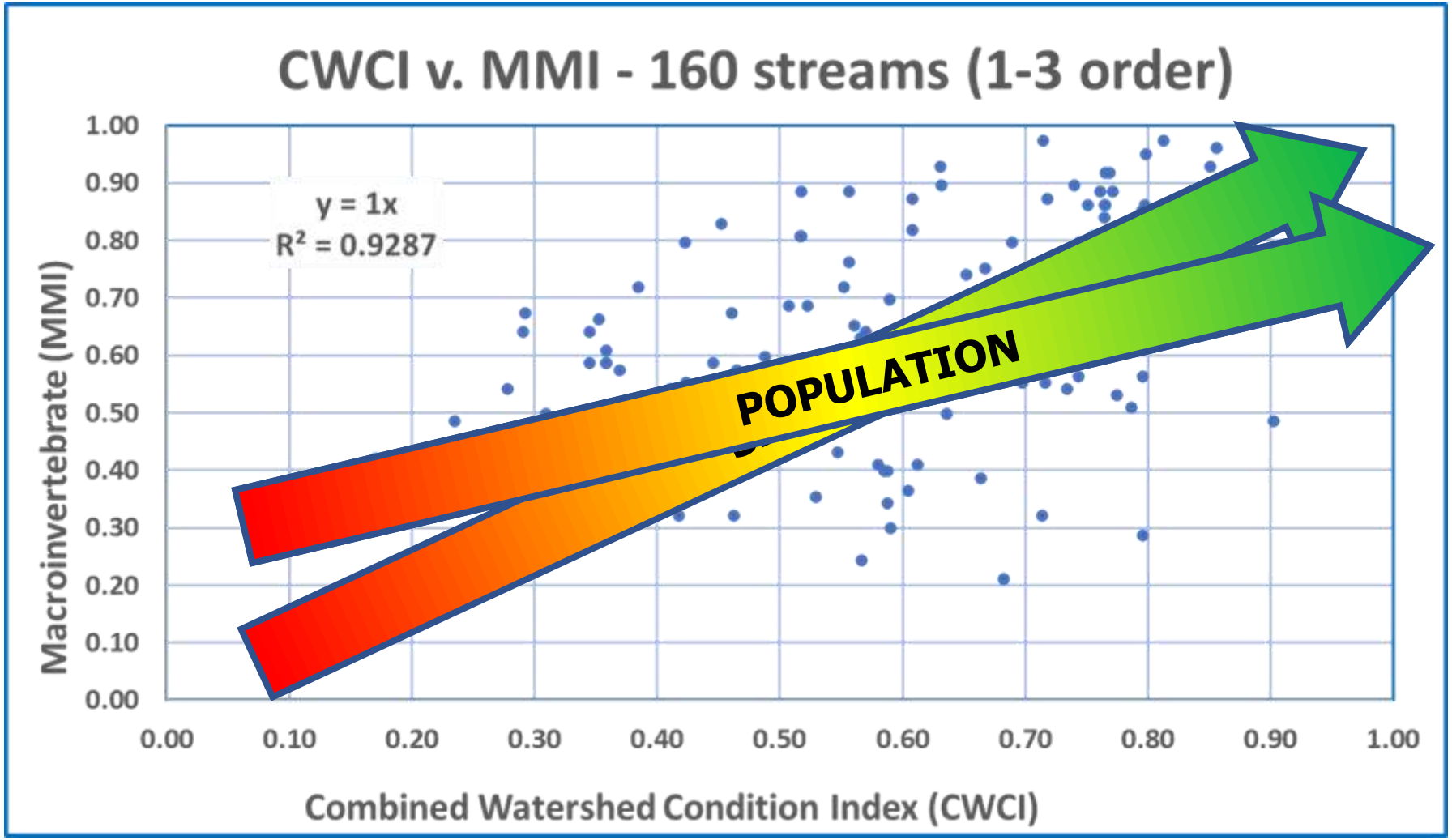




Biological Condition Gradient (BCG) Data 2020 Assessments




Model My Watershed
Analyze Monitor Model
GWLF-E (MapShed)
Evans et al. 2002.
Continental US Medium Resolution 32 km²
Streams Land Soil Terrain Climate Pt Sources Animals Water Qual
Land cover distribution
Land cover distribution
Related Layer: National Land Cover Database
Turn off
Source: National Land Cover Database (NLCD 2011)
Open Water
Perennial Ice/Snow
Developed, Open Space
Developed, Low Intensity
Developed, Medium Intensity
Developed, High Intensity
Barren Land (Rock/Sand/Clay)
Deciduous Forest
Evergreen Forest
Mixed Forest
Shrub/Scrub
Grassland/Herbaceous
Pasture/Hay
Cultivated Crops
Woody Wetlands
Emergent Herbaceous Wetlands
0%
20%
40%
60%
Change area
Active River Ares (ARA)
Smith et al. 2008.
Layers
NLCD 2011 Land Cover (CONUS)
https://www.mrlc.gov/data/nlcd-2011-land-cover-conus-0
https://modelmywatershed.org/


CWCI v. MMI - 160 streams (1-3 order)
y = 1x
R² = 0.9287
POPULATION
Macroinvertebrate (MMI)
Combined Watershed Condition Index (CWCI)
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
0.00
0.10
0.20
0.30
0.40
0.50
0.60
0.70
0.80
0.90
1.00

BENCHMARKING

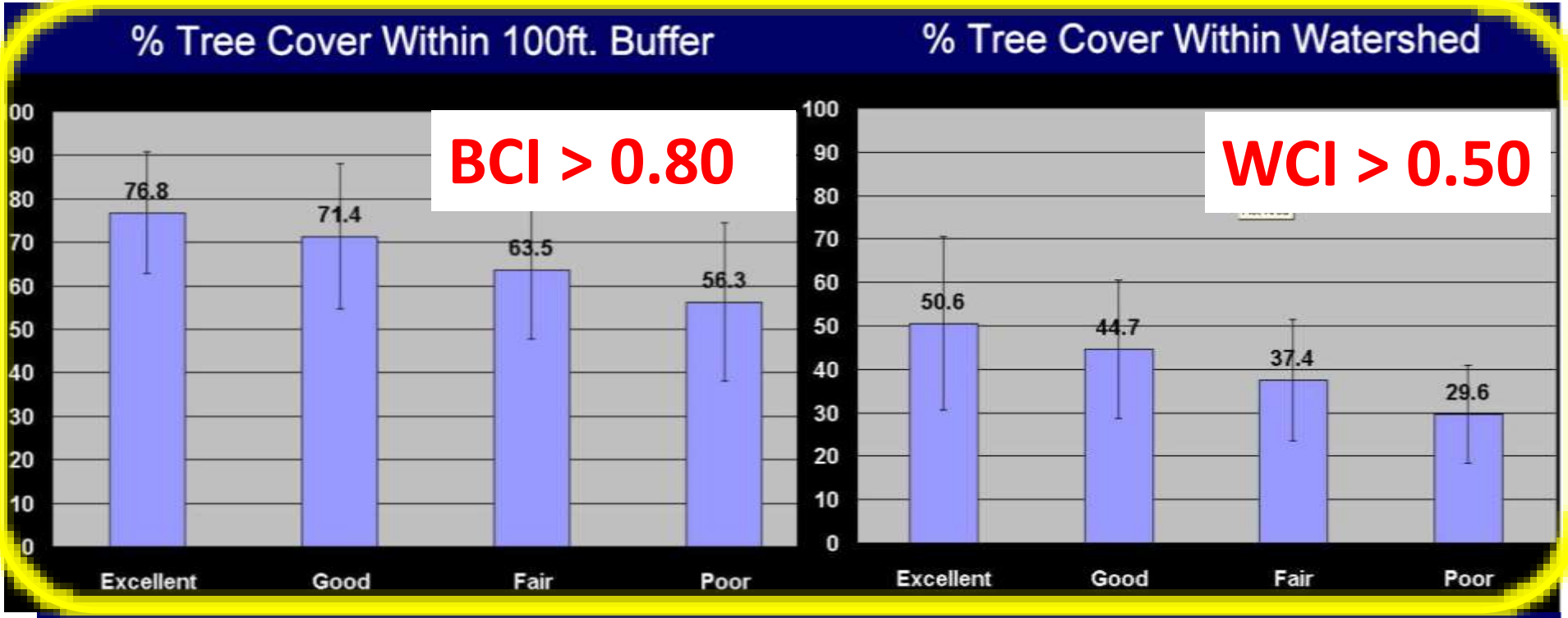
(Goetz et al. 2003)

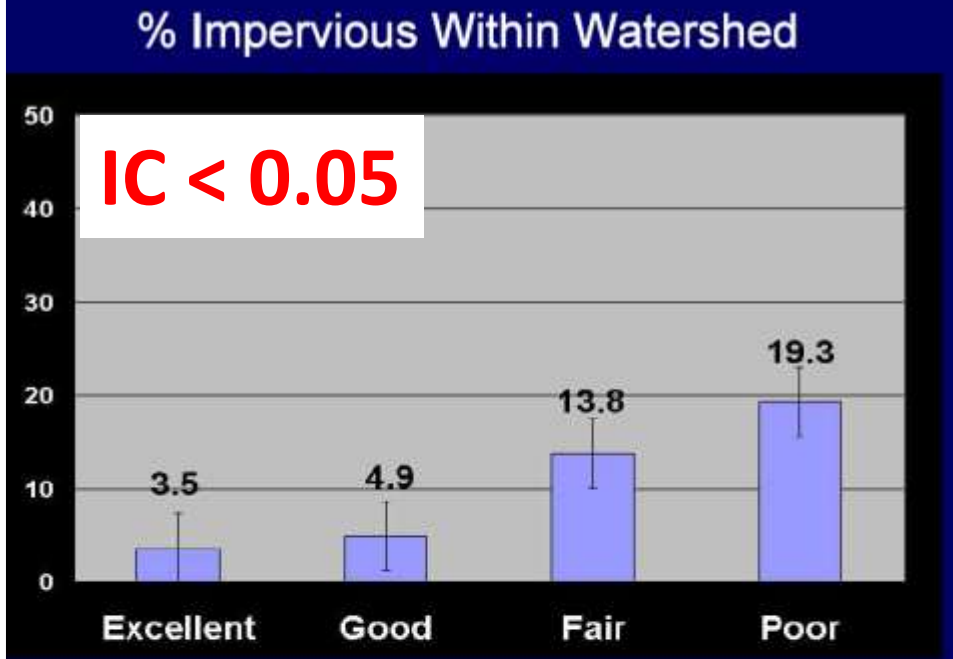
Biointegrity Benchmarks:

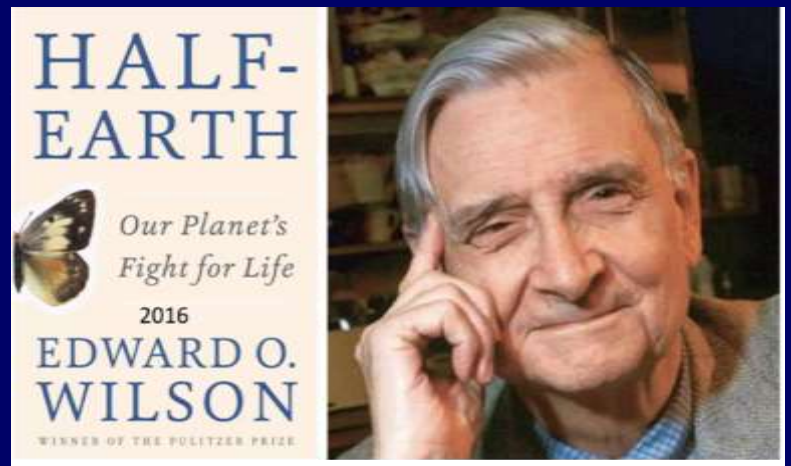
- **Buffers (BCI)**
  - **>80% Tree Cover**

- **Watershed (WCI)**
  - **>50% Tree Cover**

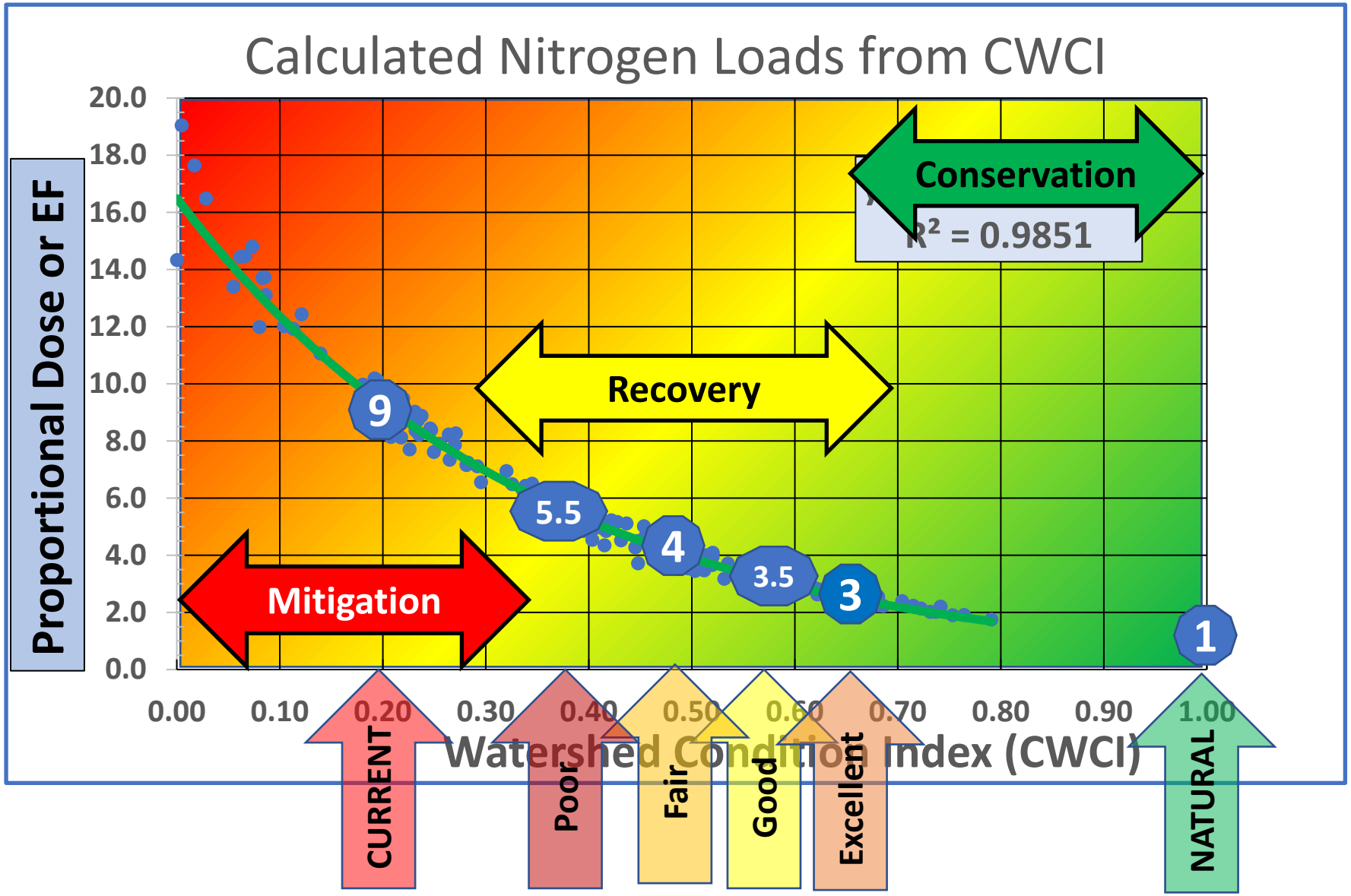
CWCI = WCI x (1+(BCI-WCI)) = .5 * (1+(.8 - .5)) = 0.65







If we conserve half the land and sea, 85% of all species will be protected from extinction and life on Earth enters the safe zone.



EF = Enrichment Factor (Becker, 2014)

1 = Enrichment Factor

CT Subregional Watershed Total Nitrogen Loading and Attainmen

Subregional WS Data	Condition Indices		TN Loading					
Watershed Name	Combined Watershed Condition Index (CWCI)	Combined Recovery Condition Index ($CWCI_R$)	TMDL Target (tons/yr)	Current Watershed Load (tons/yr)	Point Source Load (tons/yr)	Currently Under/Over TMDL Target	Best Attainable Condition (tons/yr)	BAC Under/Over TMDL Target
YELLOW MILL CHANNEL	0.08	0.46	6	19	10	23	16	10
WINTERGREEN BROOK	0.20	0.56	13	31	10	28	21	8
WILLOW BROOK	0.31	0.62	13	23	10	20	19	6
SILVERMINE RIVER	0.41	0.71	28	37	10	19	25	-3
LITTLE RIVER	0.51	0.79	19	19	10	9	18	-1
COPPS BROOK	0.61	0.81	9	7	10	7	14	5
DICKINSON CREEK	0.71	0.86	19	10	10	1	17	-2
EIGHTMILE RIVER	0.78	0.90	39	18	10	-12	22	-17

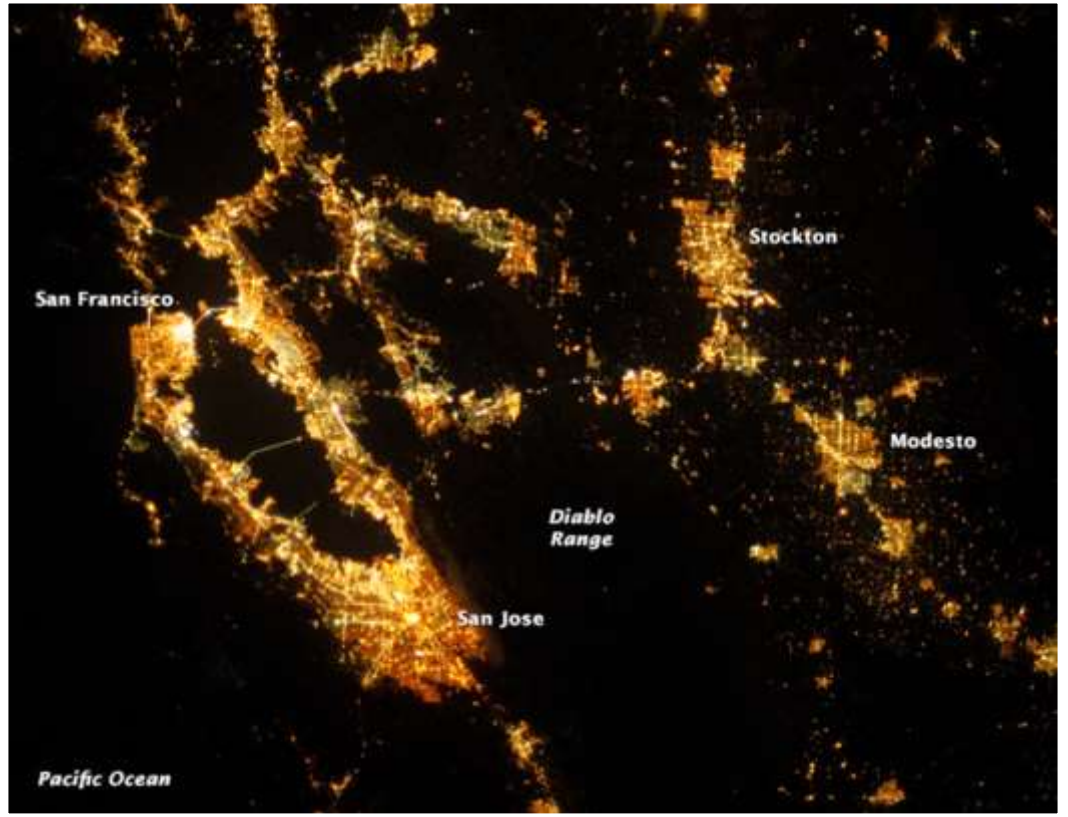
Thank you!

FOOTPRINTS IN THE WATER

Working to Make Nature Great Again

FootprintsInTheWater@outlook.com

18 December 2020



Earth at Night
More information available at:
http://antwrp.gsfc.nasa.gov/apod/ap001127.html

NASA Earth Observatory