

Water Quality Trading

Chesapeake Bay Watershed

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MARYLAND

- Patuxent
- Potomac
- Everywhere Else

PENNSYLVANIA

- Potomac
- Susquehanna

VIRGINIA

- Eastern Shore
- James
- Potomac
- Rappahannock
- York

WEST VIRGINIA

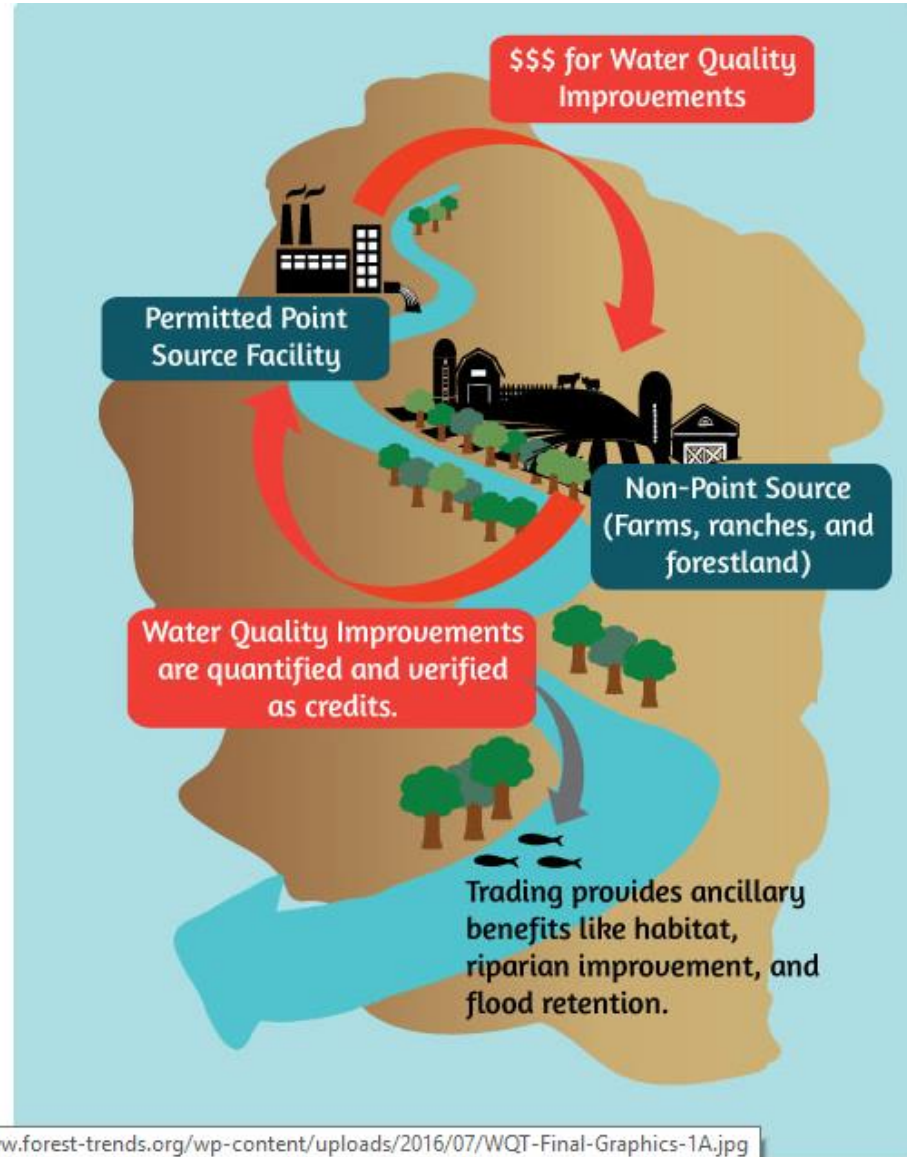
- Potomac

- No Trading Program



Figure 3.4.2. Chesapeake T





What is Water Quality Trading?

- is an option for compliance with a water quality based effluent limitation (WQBEL) in a NPDES permit.
- An option to maintain a TMDL load cap

What are the benefits of trading?

- Trading can produce substantial cost savings while meeting the same water quality goal.
- It may also offer greater flexibility on the timing and level of technology a facility might install.
- Trading can provide ancillary environmental benefits such as flood retention, riparian improvement, and habitat.

Who is involved in trading?

- buyers, sellers, brokers, etc.

What is a credit?

- A credit is a unit of pollutant reduction usually measured in pounds equivalent.

What pollutants can be traded?

- EPA's policy supports trading of nutrients (e.g., total phosphorus, total nitrogen) and sediment load reductions.

When can trading occur?

- EPA supports trading in unimpaired waters to maintain water quality standards as well as in impaired waters.

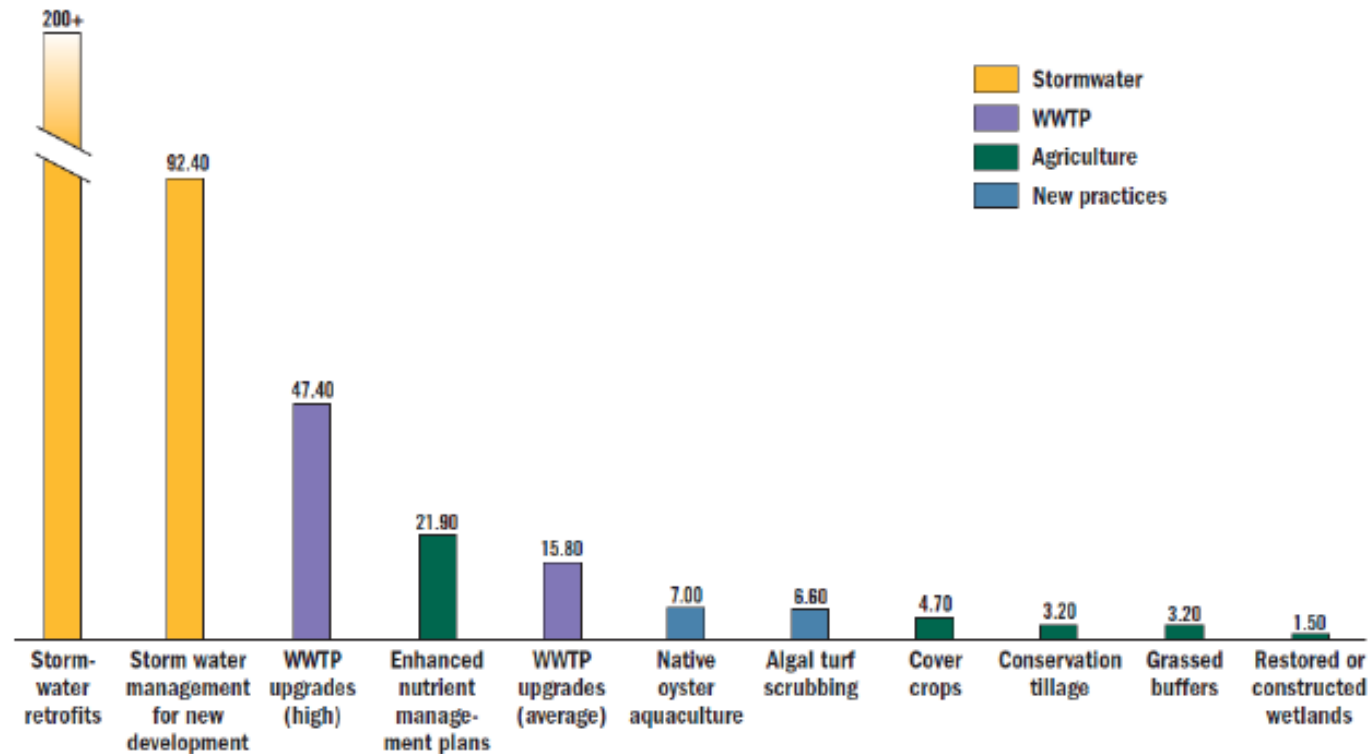
What are trading uncertainty ratios?

- Trade ratios are used to ensure the amount of reduction resulting from the trade has the same effect as the reduction that would be required without the trade.

ENGAGE ADDITIONAL SECTORS

Nitrogen reduction costs differ among sectors, creating economic opportunities for trading

Dollars per pound of annual nitrogen reduction]



Source: U.S. EPA and Abt Associates, 2009; Wieland et al., 2009; MDNR, 2008; Stewart, E.A., 2006; WRI analysis using WWTP upgrade costs from MDE and VDEQ

PROGRAM ELEMENTS FOR COMPARISON

- 1) General trading rules
- 2) Rules for purchasing credits
- 3) Rules for generating credits
- 4) Rules for verification, certification, and registration

Approved Oyster BMPs

- **Several oyster aquaculture BMPs were approved by the Chesapeake Bay Program on December 19, 2016 (details in the Panel's 1st report):**

- Provides estimates for the amount of nitrogen and phosphorus stored in oyster tissue for various sized oysters for private oyster aquaculture practices.

Decision Points	Nitrogen Assimilation Oyster Tissue	Phosphorus Assimilation Oyster Tissue
Step 1 - Suitable for BMP Consideration	YES	YES
Step 2 - Sufficient Science	YES	YES
Step 3 – Verifiable	YES	YES
Step 4 – Identified Unintended Consequences Manageable	YES	YES

Endorsed Oyster Aquaculture Practices

- **Off-Bottom Culture:** with gear, such as near bottom cages or floating rafts, using hatchery-produced oysters.



- **Bottom Culture:** no gear using hatchery-produced oysters (oysters are planted directly on the bottom).
- **Bottom with Substrate Addition:** placing oyster shell or alternative substrate, such as granite, on the bottom to build habitat to support wild oysters.



Reduction Effectiveness Estimates for N and P Assimilated in Oyster Tissue (Summarized for TMDL Application from Panel's Findings)

BMP Name	Lbs N Reduced/1,000,000 Oysters Harvested	Lbs P Reduced/1,000,000 Oysters Harvested
Diploid Oyster Aquaculture 2.25 Inches	110	22
Diploid Oyster Aquaculture 3.0 Inches	198	22
Diploid Oyster Aquaculture 4.0 Inches	331	44
Diploid Oyster Aquaculture 5.0 Inches	485	44
Diploid Oyster Aquaculture ≥ 5.5 Inches	683	66
Triploid Oyster Aquaculture 2.25 Inches	132	22
Triploid Oyster Aquaculture 3.0 Inches	287	22
Triploid Oyster Aquaculture 4.0 Inches	573	66
Triploid Oyster Aquaculture 5.0 Inches	970	110
Triploid Oyster Aquaculture ≥ 5.5 Inches	1,477	154
Site-Specific Monitored Oyster Aquaculture	NA	NA

1 pound (Lbs) ~ 0.45 kg

Above BMPs would be reported annually and are only eligible in tidal waters (to qualify oysters had to be < 2 inches when planted and alive when removed).

QUALIFYING CONDITIONS FOR TMDL USE

- Only eligible in tidal waters.
- Only includes oysters that are removed moving forward from the time the BMP is approved/implemented.
- Oysters had to have been grown from initial sizes < 2.0 inches shell height.
- Oysters have to be alive when removed.
- States must report the number of oysters harvested or pounds reduced annually.

Virginia Nutrient Trading and Offset Program

Program Links:

- General VPDES Watershed Permit Regulation for TN and TP Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia 2005, 9 VAC 25-820-10 et seq. Available at <http://law.lis.virginia.gov/report/Gk53Q>.
- Offsite Compliance Options for VPDES Permitting 2014, 9 VAC 25-870-69. Available at <http://law.lis.virginia.gov/admincode/title9/agency25/chapter870/section69/>
- Proposed Regulation: Certification of Nonpoint Source Nutrient Credits <http://townhall.virginia.gov/l/viewstage.cfm?stageid=8001>.

Maryland Nutrient and Sediment Trading and Offset Program

Program Information

- 15.20.12 Agricultural Nutrient and Sediment Credit Certification Program (effective 8-29-2016)
- Chapter 11 Maryland Water Quality Trading Program (effective 7-16-2018)
- MDE and MDA developed in 2016 a cross-sector trading manual guidance that remains in draft form.



Water Quality Trading Program



Trading Regulations

- Maryland Department of Agriculture
 - The Agricultural Nutrient and Sediment Credit Certification Program establishes the requirements and standards for the generation, verification, and certification of nonpoint source nitrogen, phosphorus, and sediment credits on agricultural lands (Annotated Code of Maryland 15.20.12).
- Maryland Department of the Environment
 - The Maryland Water Quality Trading Program establishes the policies and procedures to support market-based trading activities to enhance water quality and to certify, verify, and register non-agricultural point and nonpoint source nitrogen, phosphorus, and sediment credits (Annotated Code of Maryland 26.08.11)



Water Quality Trading Program



Trading Regions

- Only credits generated in Maryland can be purchased or used in Maryland
- Trading regions are based on the geographical boundaries of the three large watersheds within Maryland:
 - Potomac River Basin
 - Patuxent River Basin
 - Eastern and Western Shore River Basins, including a portion of the Susquehanna watershed.
- Trades must occur within the same trading regions





Water Quality Trading Program



Program Participation

- A person may only use credits generated and sold within the State to:
 - Comply with the applicable nitrogen, phosphorus, and sediment load or wasteload allocations of the Maryland portion of the Chesapeake Bay TMDL, local TMDLs, or NPDES permit requirements; or
 - Improve water quality.
- To participate in the Trading Program a person must:
 - Meet appropriate baseline requirements;
 - Implement a BMP approved by the Chesapeake Bay Program that is acceptable to the Department;
 - Demonstrate a load reduction below the baseline requirements; and
 - Submit a Certification and Registration form to MDE or MDA.

Questions?