



**Maryland**  
Department of  
the Environment

# **WIP Impact, Implications for Trading and Accounting**

SEWER EXTENSION WORKSHOP

WEDNESDAY, DECEMBER 14, 2016

Chesapeake College



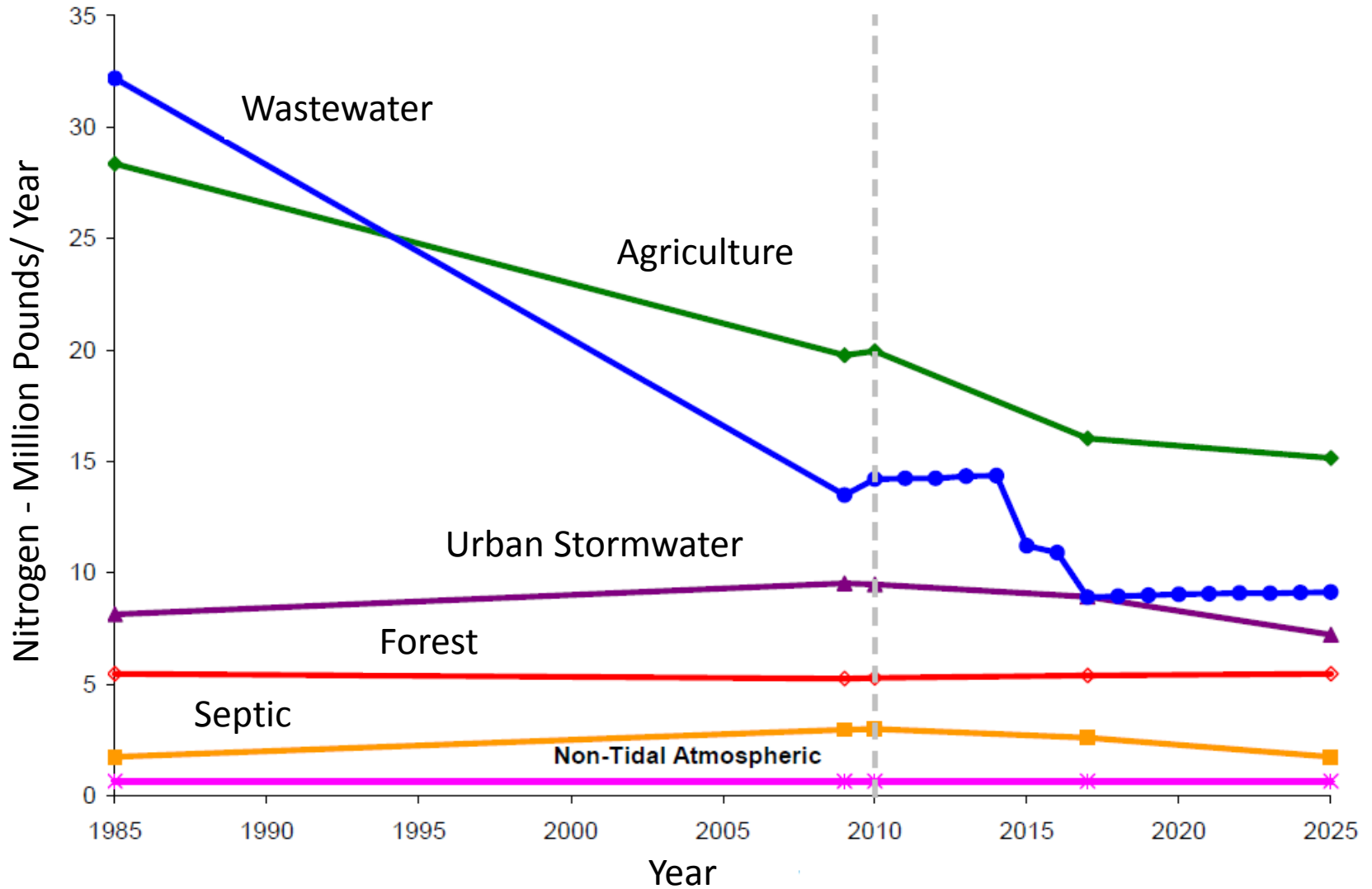
# Overview

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- WIP Impact
- Trading
- Accounting for Connections
  - How does it work



# Septic System Load in Context





# Relative Impact of Septic Systems

## Nitrogen Loads to the Bay

	2010 Progress	Final Target	Reduction
Source Sector	Million Lbs/Yr	Million Lbs/Yr	Million Lbs/Yr
Agriculture	19.95	15.22	4.73
Forest	5.29	5.31	0
Non-Tidal Atm	0.66	0.66	0
<b>Septic</b>	<b>3.00</b>	<b>1.85</b>	<b>1.15</b>
Stormwater	9.48	7.55	1.93
Wastewater	14.37	10.58	3.79
<b>Total</b>	<b>52.76</b>	<b>41.17</b>	<b>11.59</b>

← ~10%



# Relative Impact of Septic Systems

County	OSDS Load as Percent of County TN Load
Calvert	31%
St. Mary's	18%
Anne Arundel	16%
Charles	13%
Cecil	10%
Harford	9%
Howard	8%
Queen Anne's	6%
Wicomico	6%
Remaining Counties	5% or Less



# Implications for Trading

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- Sector reduction responsibility does *\*not\** equate solely to explicit reductions from that sector.
- Phase II WIP Underlying Strategy:  
*“.. sectors facing higher costs may pay for reductions from other sectors that have lower costs.”*
- Septic responsibility will be met by a combination of explicit reductions and credit purchases.
- Septic ultimate target will likely be met sometime after 2025, TBD by Phase III WIP process.



# Implications for Trading

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## Evolving Trading Policy Elements:

- 2008 Point Source Trading Policy: Accounting rules for septic connections to ENR plants. Being updated as part of Maryland's "Trading Manual"
- MS4 Accounting Guidance: Accounting rules for crediting septic upgrades towards meeting MS4 permit treatment requirements.
- Trading-in-Time Concept: WWTP reduction surpluses at 2025 may cover septic reduction shortfalls temporarily.



# Implications for Trading

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## Evolving Trading Policy Elements:

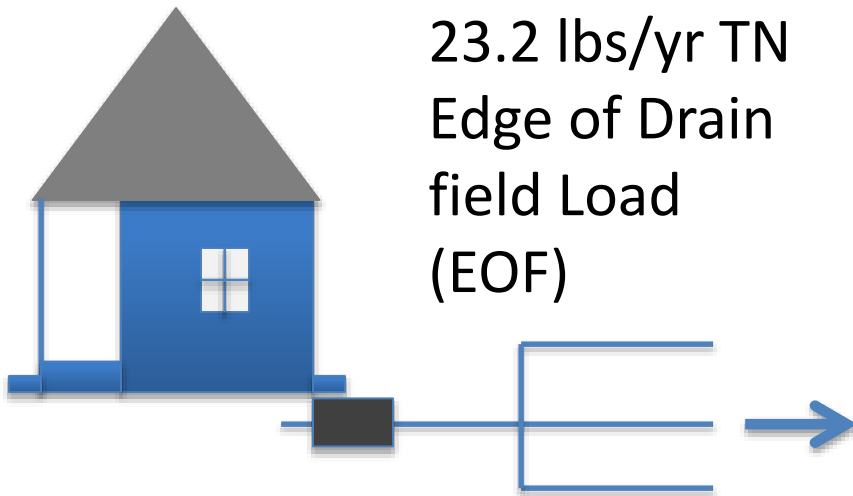
- Bay Restoration Fund Credit Purchase Initiative: Amend statute to allow the purchase of nutrient reduction credits. Reduction credit may be assigned to the septic system sector.
- Aligning for Growth Policy: Ensure existing allocations for land that is developed is reassigned to new septic systems or those new septic loads are offset.





# Accounting for Septic Connections

**Basic Concepts** (may change a little when the new Phase 6 model is done).



E.g, For Critical Area:  
 $0.8 \times 23.2 = 18.56 = \sim 18.6$

Three Cases for  
Edge of Stream  
Load (EOS):

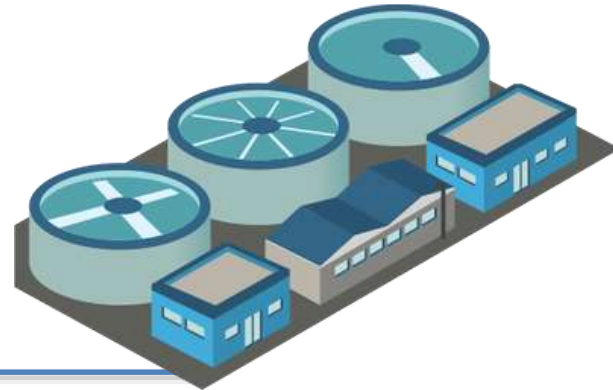
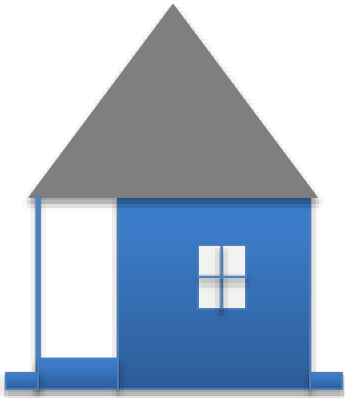
1. Critical Area → 18.6 lbs/yr  
(80% Transport)
2. 1,000' from Stream → 11.6 lbs/yr\*  
(50% Transport)
3. All Other → 7.0 lbs/yr\*  
(30% Transport)



# Accounting for Septic Connections

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**Basic Concepts: ENR Load per household: 2.4 lbs/year TN**

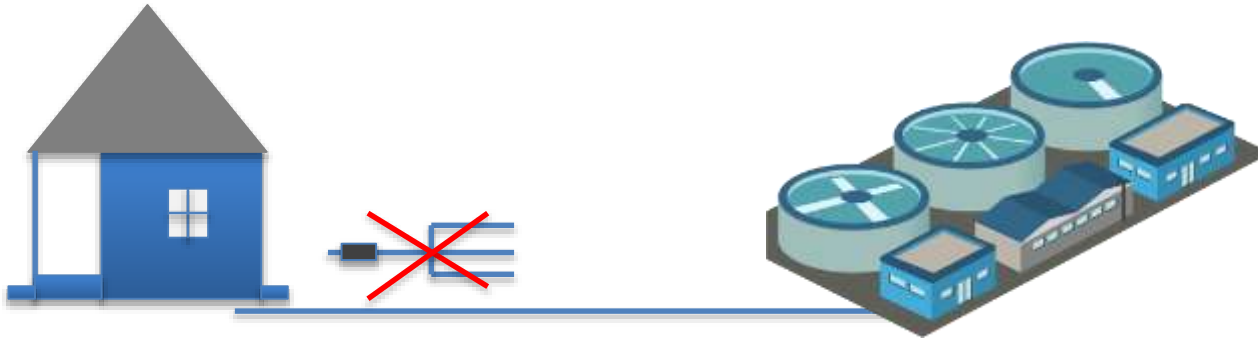


$$(200 \text{ gpd} \times 4 \text{ mg/l} \times 365 \text{ days/yr} \times 8.34) / 1,000,000 = 2.435$$



# Accounting for Septic Connections

**Basic Concepts:** Estimated Nitrogen Reduction to the Bay from one Septic Connection to an ENR Plant (Uses 2.4 lbs of plant nutrient capacity)

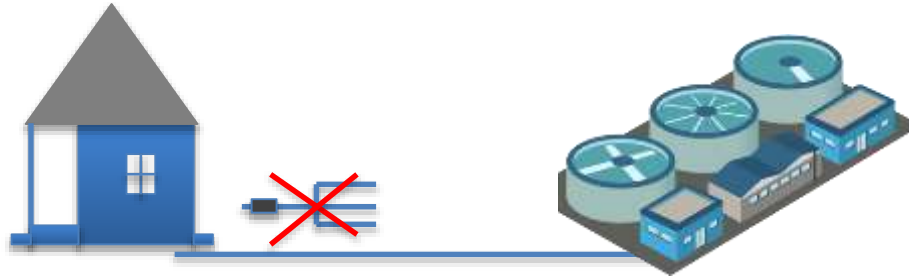


	Estimated TN Reduction to Bay	
1. Critical Area	$18.6 - 2.4 =$	16.2 lbs/yr
2. 1,000' from Stream	$11.6 \times 0.94 - 2.4 =$	8.5 lbs/yr
3. All Other	$7.0 \times 0.94 - 2.4 =$	4.2 lbs/yr



# Accounting for Septic Connections

**Basic Concepts:** Estimated **Phosphorus Increase** to the Bay from one Septic Connection to an ENR Plant



Septic systems are estimated to have zero phosphorus load, due to the presumption that TP binds with soils. When Connected to a WWTP the phosphorus goes to the treatment plant and is discharged.

$$200 \text{ gpd} \times 0.3 \text{ mg/l} \times 365 \text{ days/yr} \times 8.34 / 1,000,000 = 0.18 \text{ lbs/yr}$$



# Accounting for Septic Connections

## Basic Concepts: Estimated Nitrogen Credit Transfer to ENR Plant from one Septic Connection

Geographic Zone of the Septic System	(A) Drain Field Load lbs/yr	(B) Delivery Factor to Stream	(C) = (A) x (B) Original OSDS Load lbs/yr (EOS)	(D) = 0.5 x (C) Increased WWTP Capacity lbs/Yr (EOS)*	(E) = (D)/(F) EDU Capacity Created	(F) ENR EDU Loading Rate (lbs/yr)
Critical Area	23.2	0.8	18.56	<b>9.28</b>	3.8	2.44
1,000 Ft of Stream	23.2	0.5	11.6	<b>5.80</b>	2.4	2.44
All Other	23.2	0.3	6.96	<b>3.48</b>	1.4	2.44

\* The other 50% is directed to Bay reduction progress for the Chesapeake Bay subject to a deliver factor



# Accounting for Septic Connections

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## **Basic Concepts:** Addressing Phosphorus when transferring **Nitrogen Credit Transfer to ENR Plant** from one Septic Connection

- If available, the State would use the surplus TP WLA coming from the minor plant upgrade to provide adjusted phosphorus WLA for OSDS connection to a minor ENR facility.
- TP credit of 0.23 lbs/year per EDU is the basis of the plant load allocation for OSDS connections to an upgraded facility.
- Allow minor facilities to connect OSDSs without the need to achieve lower than 0.3 mg/l TP.
- All is subject to ensuring protection of local water quality in light of increased surface water loads from WWTP.



Thank you

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