

Regulatory Background: Systematic Elimination of Point Sources in the Inland Bays Watershed

Rehoboth Beach

Board of Commissioners Meeting

October 20, 2008

Jennifer Volk

Federal Clean Water Act

- States must prepare and submit to the EPA every other year:
 - Watershed Assessment Report (305(b) Report)
 - List waters not meeting standards (303(d) List)

Water Quality Standards

- Designated uses
 - Agricultural Water Supply
 - Industrial Water Supply
 - Public Water Supply
 - Secondary Contact
 - Primary Contact
 - Aquatic Life and Wildlife
 - Cold Water Fish
 - Harvestable Shellfish
 - Exceptional Recreational and Ecological Significance
- Water quality criteria
 - Concentrations, parameter levels, or narrative statements
 - Dissolved Oxygen, Nitrogen, and Phosphorus

It is assumed that if criteria are met,
designated uses will be protected.

Why should I care about DO and nutrient levels?

- Too many nutrients (eutrophication) offset the balance between photosynthesis and respiration so that there is too little dissolved oxygen in water



- »Loss of habitat
- »Alteration of food web
- »Fish and shellfish kills
- »Human health effects



Dead-end canal of Rehoboth Bay, August 28, 2000

Total Maximum Daily Loads

- The maximum amount of a pollutant that can enter surface waters and still meet water quality standards

$$\text{TMDL} = \text{WLA} + \text{LA} + \text{MOS}$$

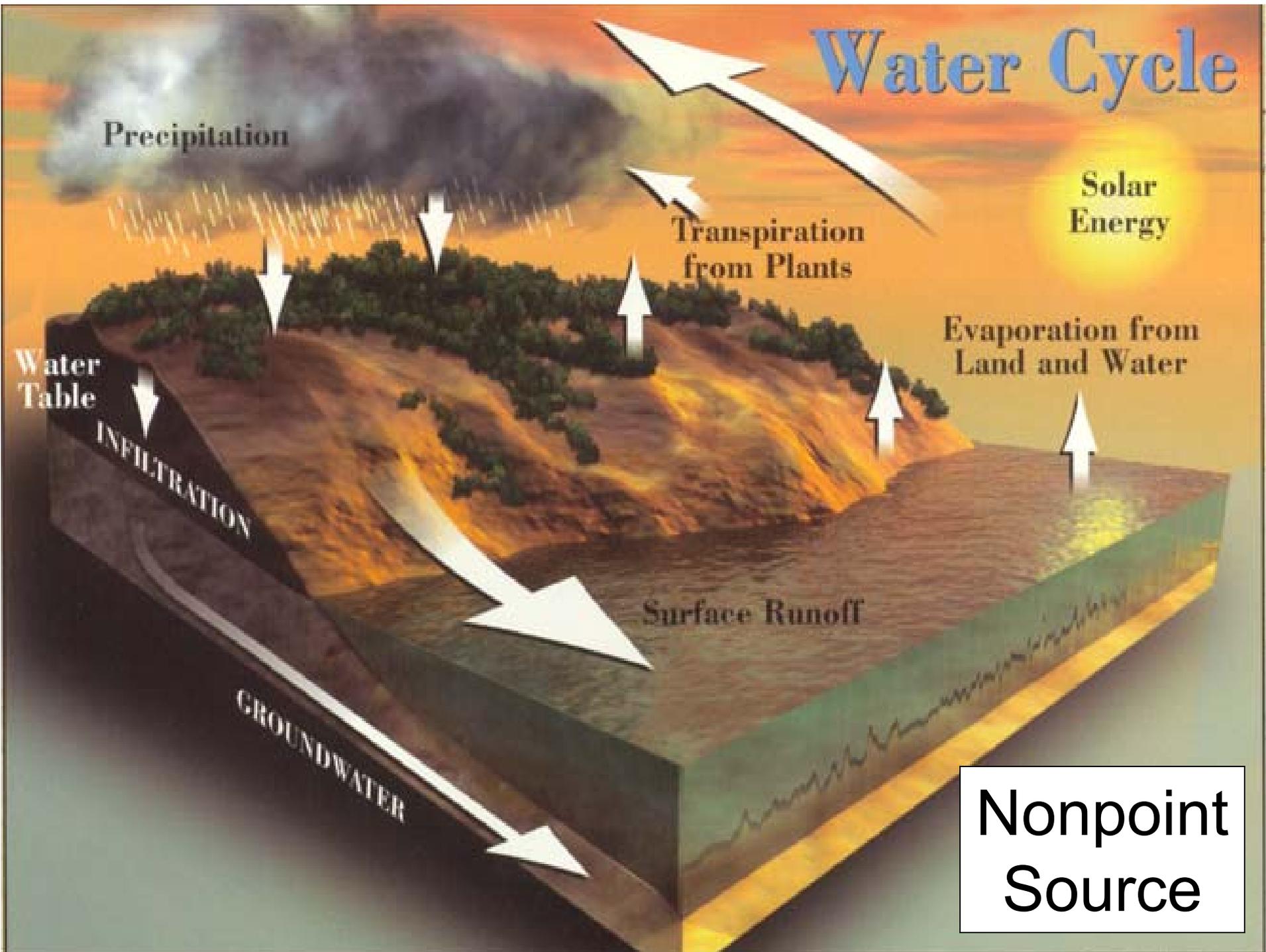
- WLA = waste load allocation (point sources)
- LA = load allocation (nonpoint sources)
- MOS = margin of safety

Point Source

Facility with a
National Pollution Discharge
Elimination System (NPDES)
permit.



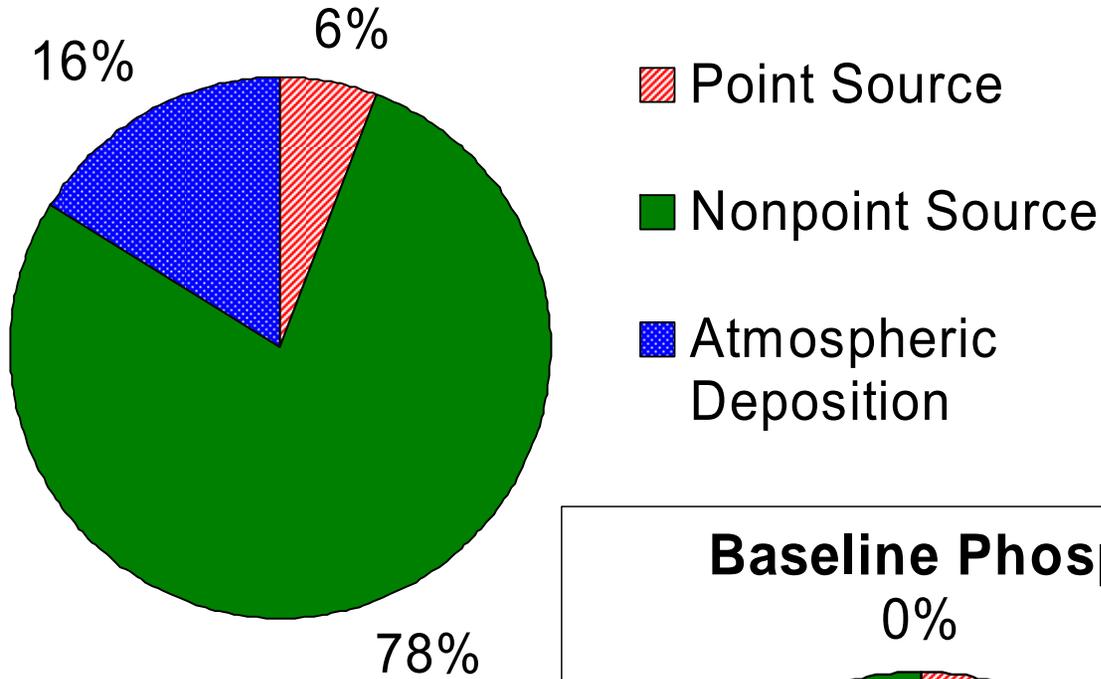
Water Cycle



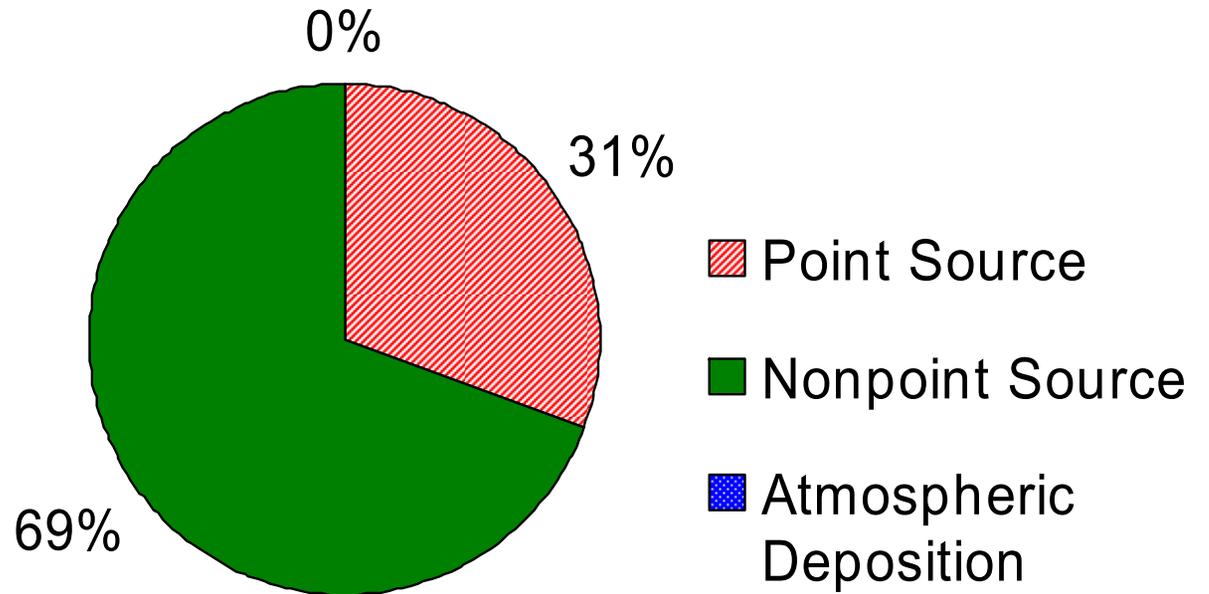
Nonpoint Source

Inland Bays Sources of Pollution

Baseline Nitrogen Load (kg/d)



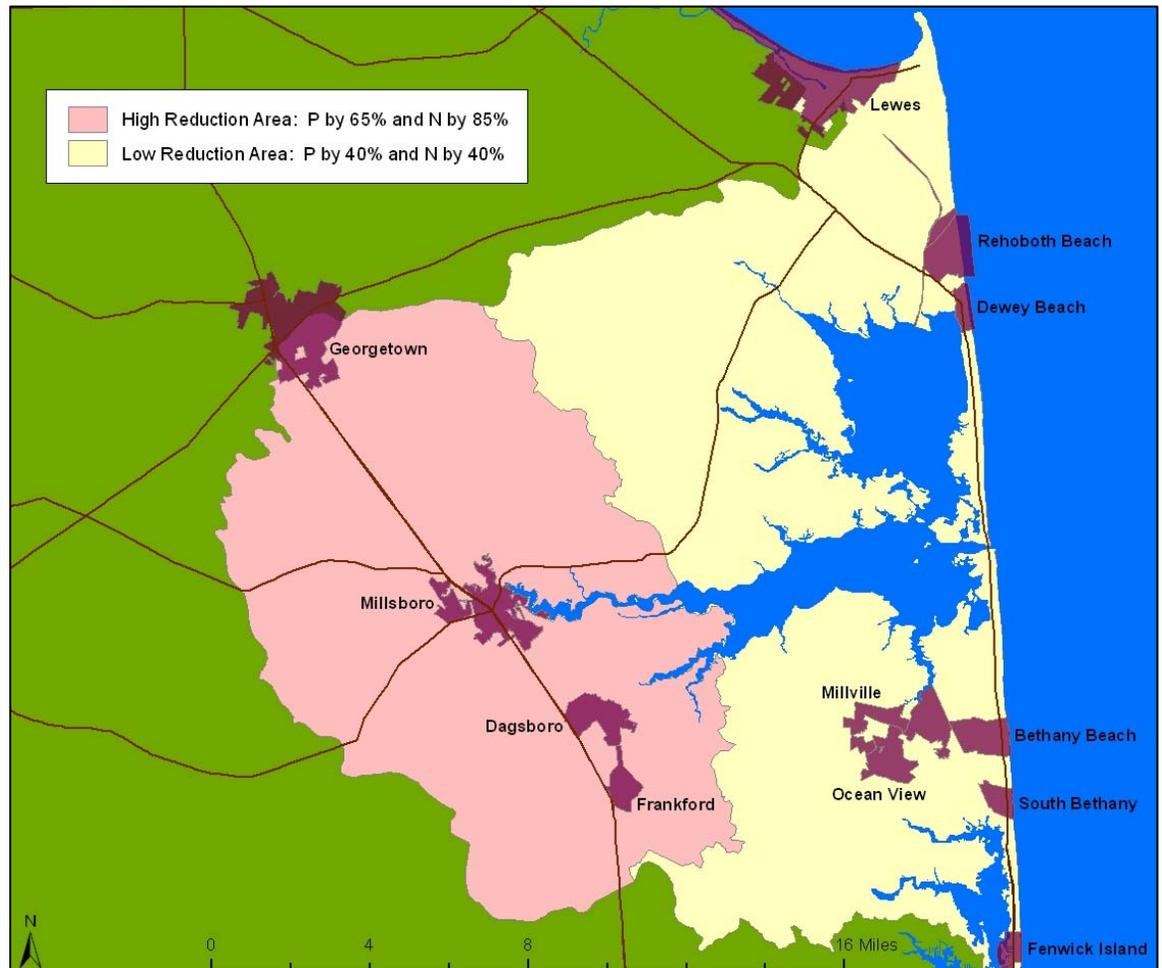
Baseline Phosphorus Load (kg/d)



**Based on TMDL
modeling data from
1988-1990**

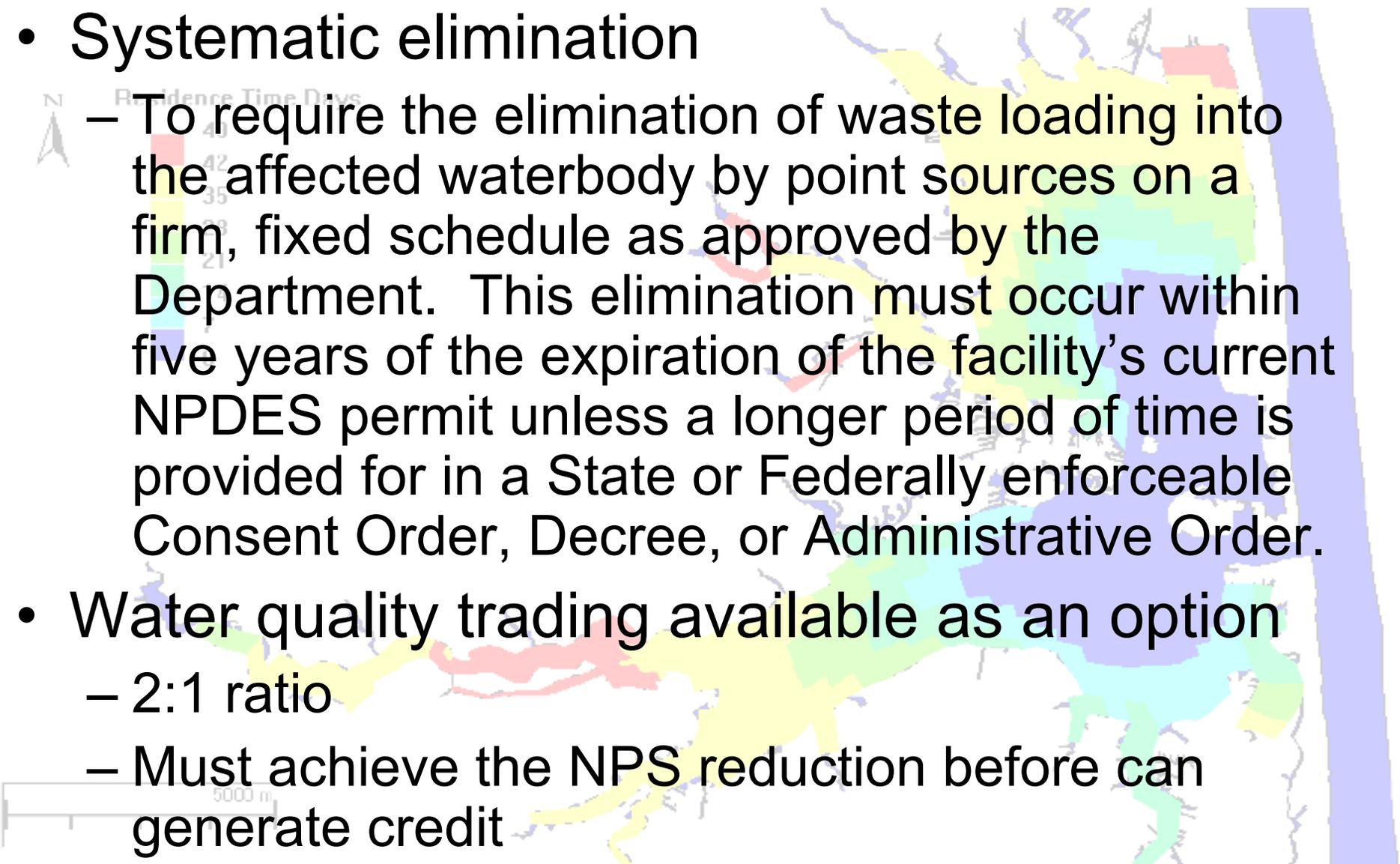
Inland Bays TMDLs

- **Systematic elimination of all point sources**
- Remove 40-85% nonpoint N
- Remove 40-65% nonpoint P
- 20% reduction in atmospheric deposition of N
- Implementation through Pollution Control Strategy



Point Sources

- Systematic elimination



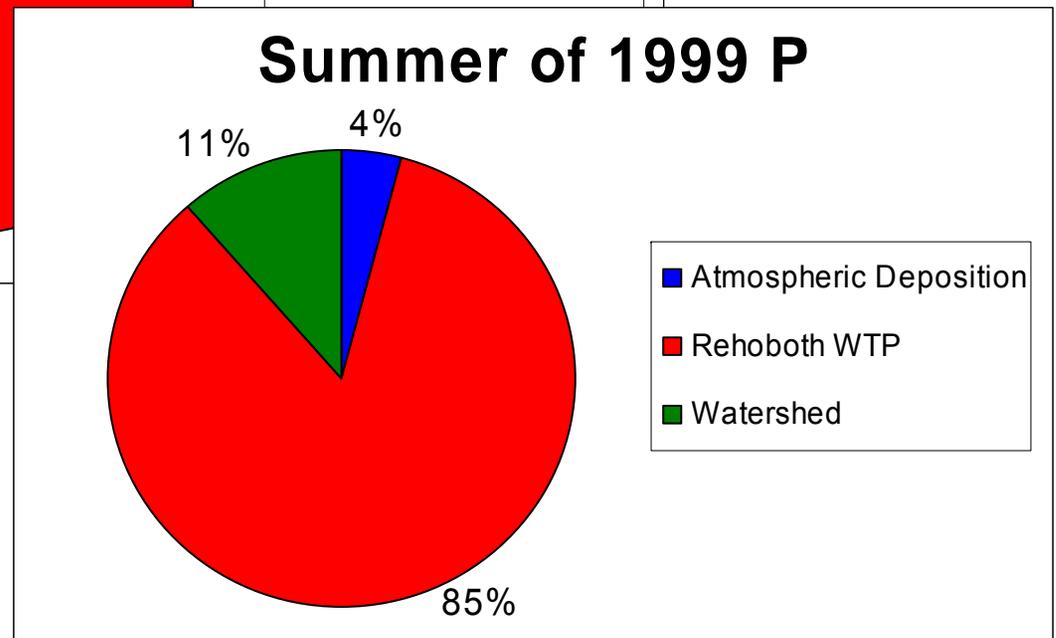
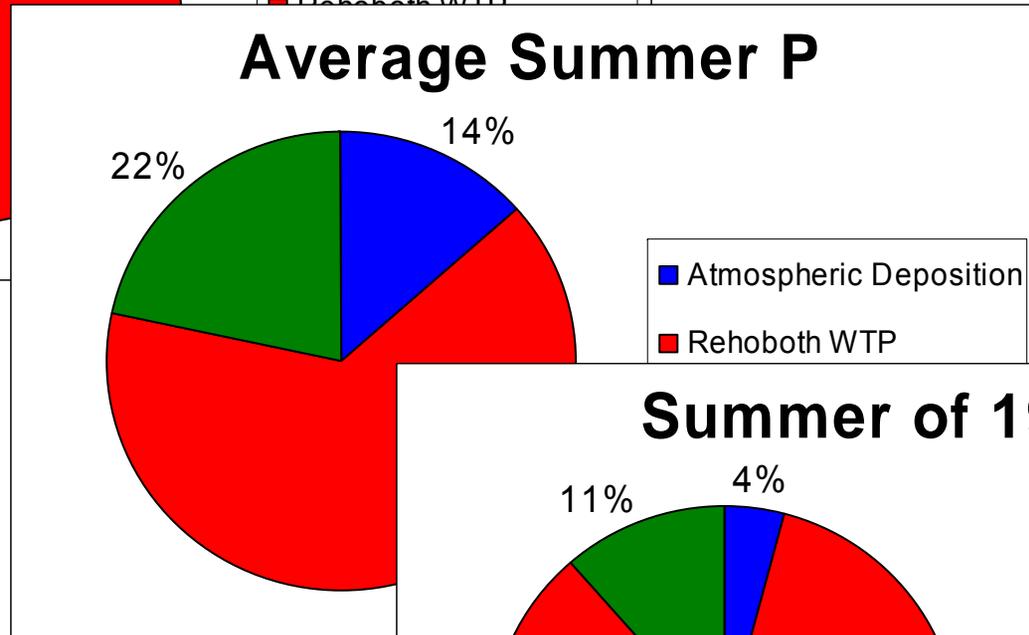
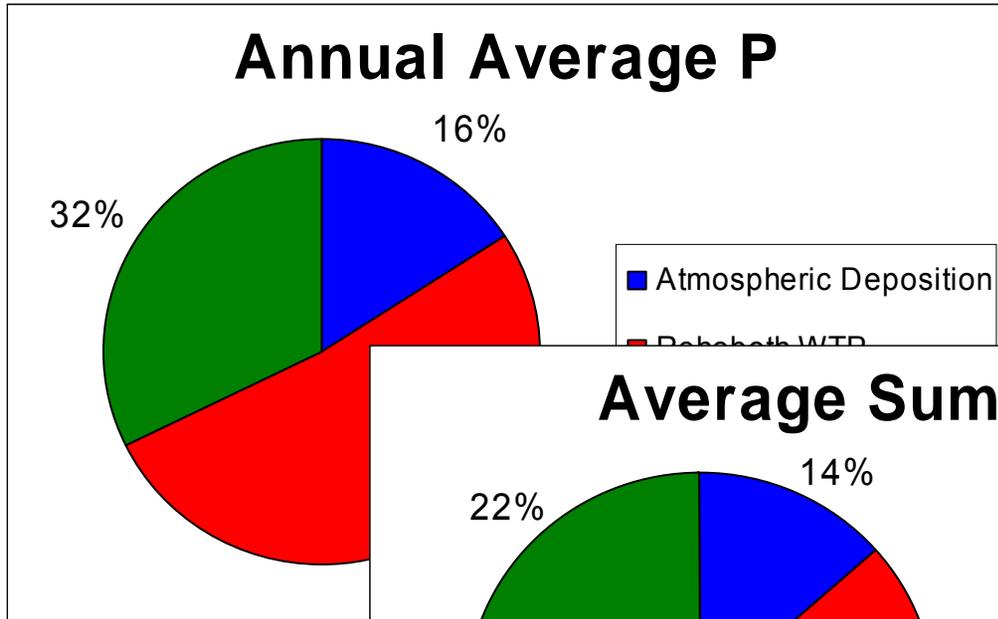
– To require the elimination of waste loading into the affected waterbody by point sources on a firm, fixed schedule as approved by the Department. This elimination must occur within five years of the expiration of the facility's current NPDES permit unless a longer period of time is provided for in a State or Federally enforceable Consent Order, Decree, or Administrative Order.

- Water quality trading available as an option

- 2:1 ratio

- Must achieve the NPS reduction before can generate credit

Rehoboth Bay Sources of Pollution

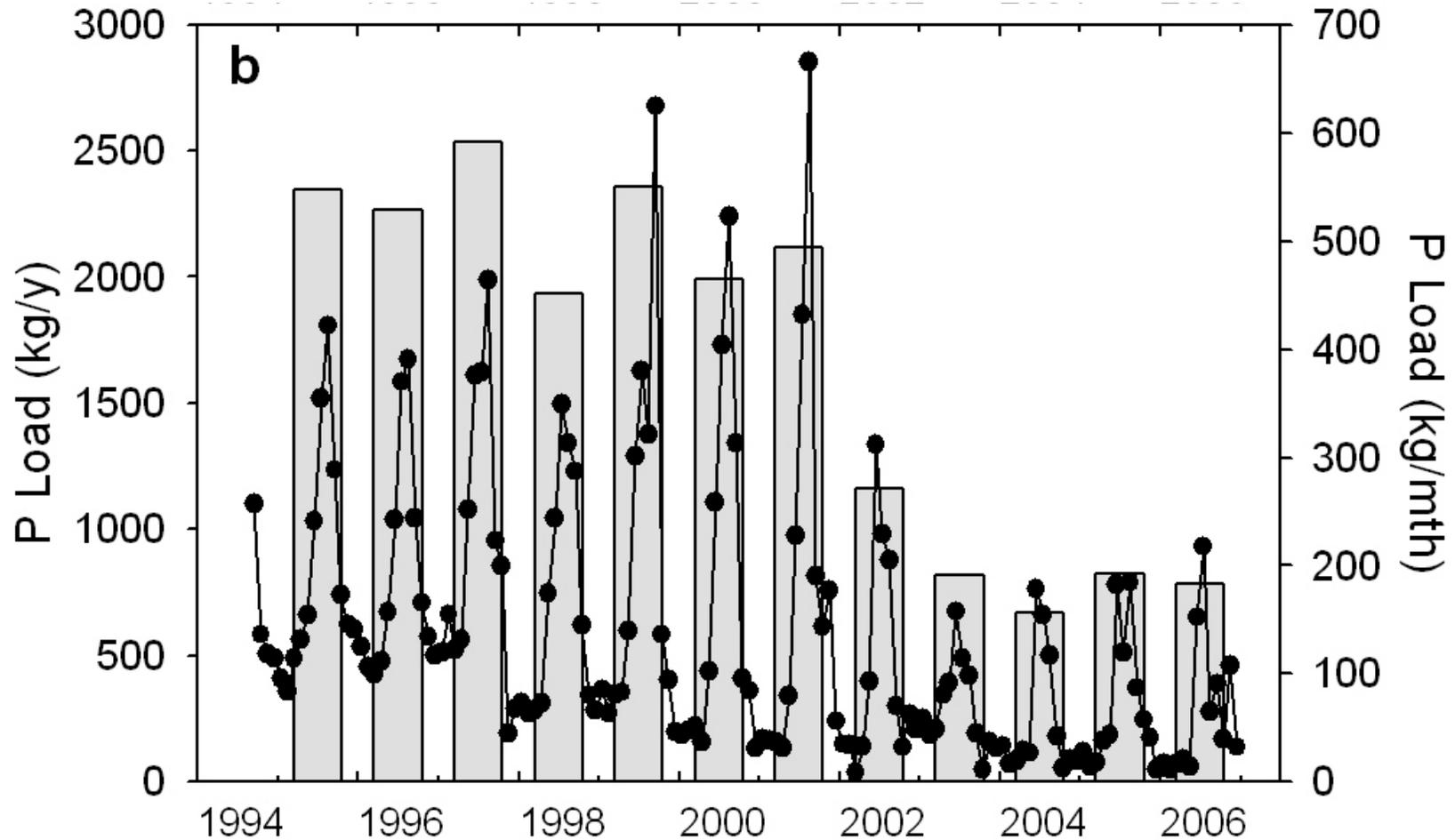


**Based on J. Jennings
thesis data from
1999-2001**

Point Source Progress to Date

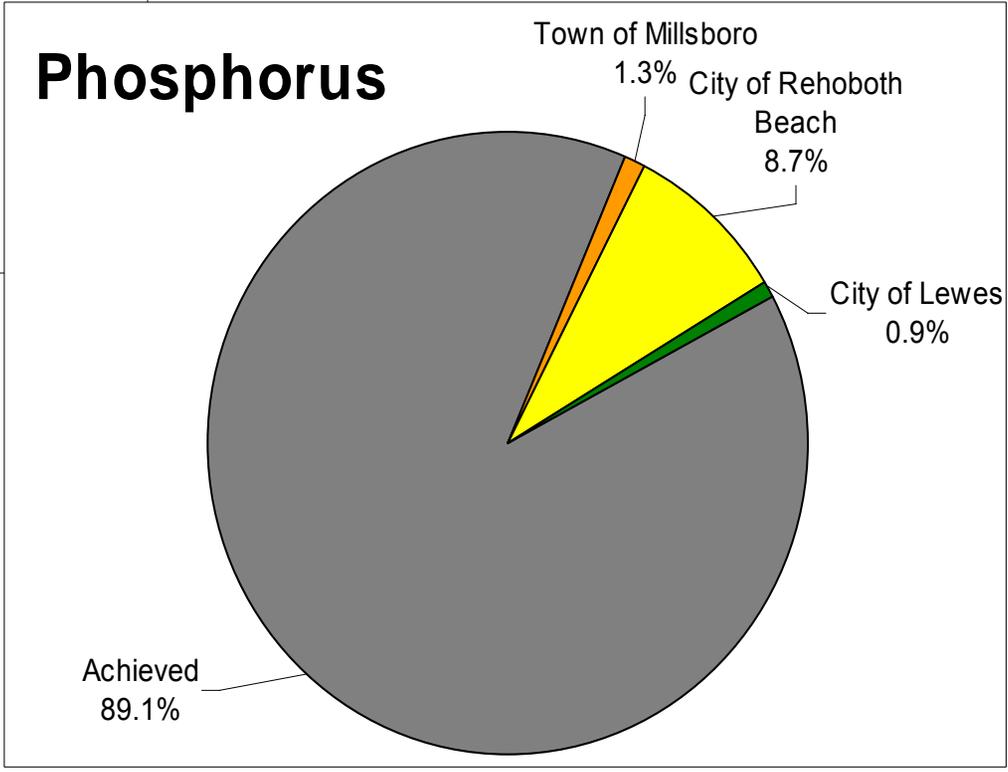
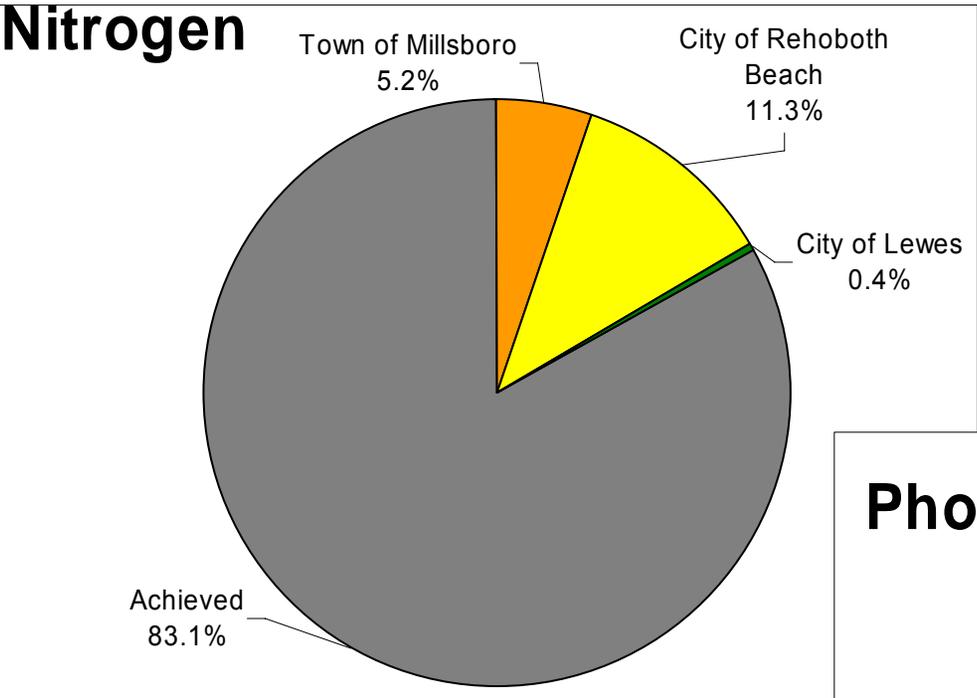
- 8 eliminated
 - Bayshore Mobile Home Park
 - Colonial East Mobile Home Park
 - Colonial Estates
 - Delaware Seashore State Park
 - Delaware State Housing Authority
 - Frankford Elementary School
 - George
 - town Wastewater Treatment Plant
 - Mountaire (previously Townsend's; 2 sources)
- 1 trade
 - Pinnacle Foods (previously Vlassic)
- NRG - not affected by TMDL
- 3 remaining
 - Lewes Wastewater Treatment Plant
 - Upgrades
 - Trading proposed
 - Millsboro Wastewater Treatment Plant
 - Upgrades
 - Exploring alternatives
 - Rehoboth Beach Wastewater Treatment Plant
 - Upgrades
 - Consent decree

Rehoboth Progress To Date

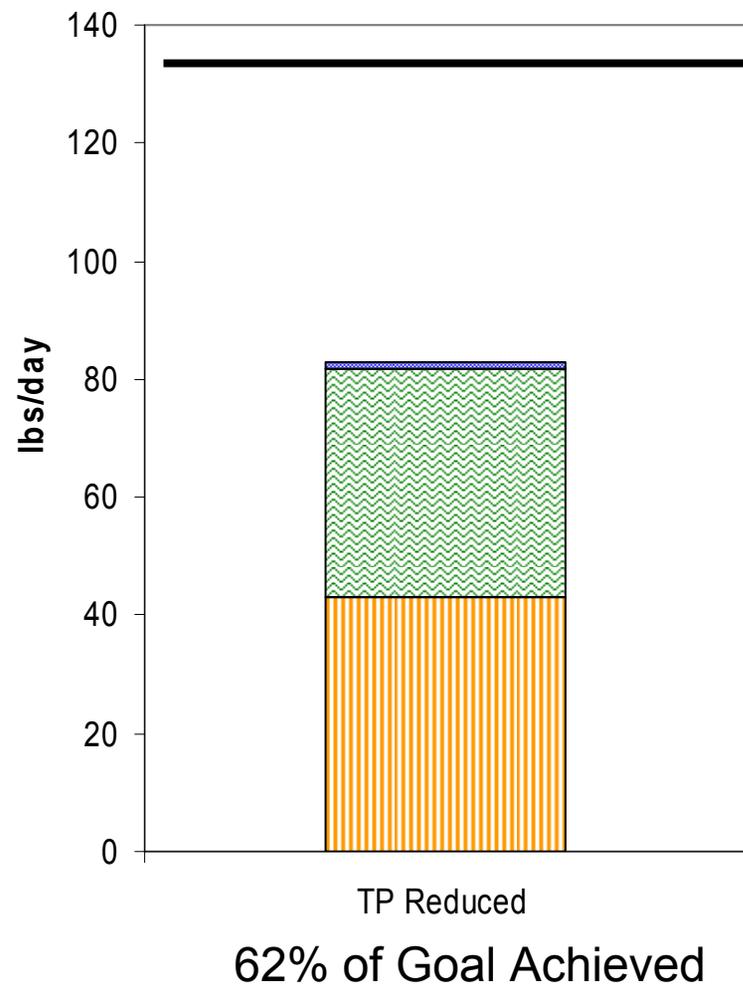
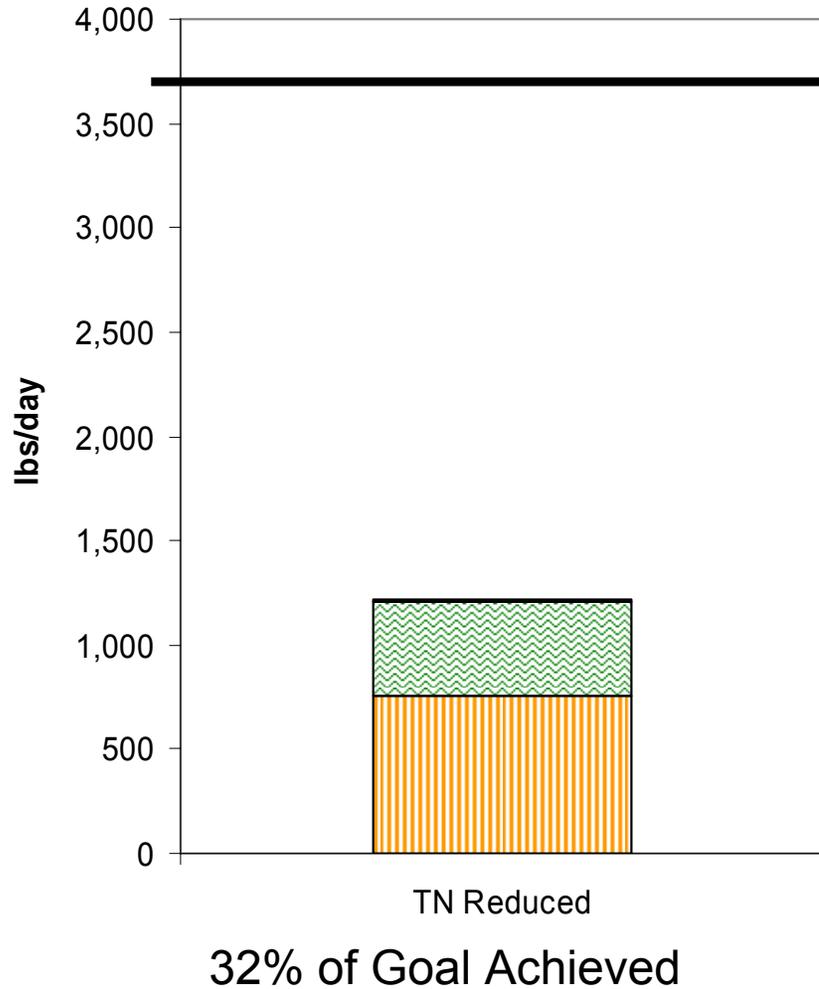
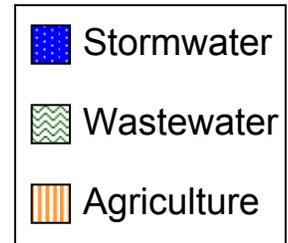


Data provided by R. Stenger (City of Rehoboth Beach)
Figures created by Dr. W. Ullman (UofD CMES)

Point Source Progress to Date



NPS Progress to Date



Options for Systematic Elimination

- Alternative disposal methods have various environmental and economic impacts
 - No option is cheap
 - Don't want to turn a point source into a nonpoint source
- Best management practices to achieve NPS reductions in the Inland Bays Watershed are estimated to cost \$25,000,000/year.

The Pollution Control Strategy

- Based on recommendations from the Tributary Action Team (process began in 1998)
- Voluntary and regulatory actions to reduce nonpoint source pollution
 - Establishment of a buffer zone
 - Increased treatment of stormwater
 - Improved maintenance and performance of onsite wastewater treatment and disposal systems
 - Voluntary implementation of ag practices
- Regulations signed by the Secretary and will become effective November 11, 2008

The Pollution Control Strategy

- Establishment of a buffer zone
 - For all new major subdivisions and new activities require a site or major subdivision plan
 - Water features to be buffered mapped

Map of Water Features to be Buffered in the Inland Bays Watershed

Perennial - Primary
(Blue)

Intermittent - Secondary
(Green)

Forested Ditch - Secondary
(Yellow)



The Pollution Control Strategy

- Establishment of a buffer zone
 - For all new major subdivisions and new activities require a site or major subdivision plan
 - Water features to be buffered mapped
 - 100-ft on primary & 60-ft on secondary waters
 - Can be reduced to 50-ft on primary and 30-ft on secondary waters when combined with
 - Advanced stormwater management options and
 - Development-wide nutrient management plan
 - Buffers will exist in community open space and will be managed by homeowners' associations

The Pollution Control Strategy

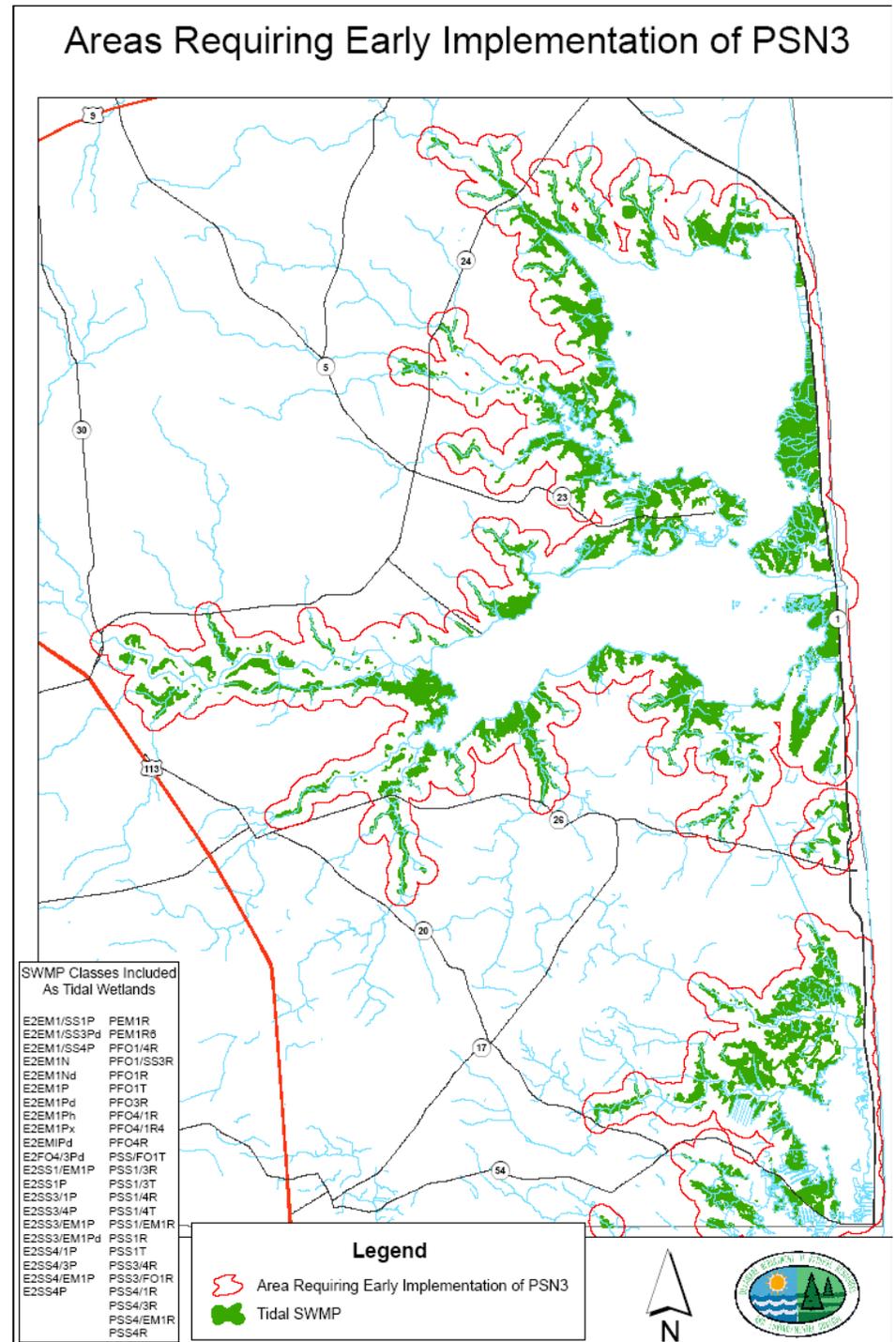
- Increased treatment of stormwater
 - If water features are present
 - Establish standard-width buffers
 - Establish reduced-width buffers in combination with other pollution reduction actions
 - If water features are not present, utilize one or more pollution reduction action that reduces nutrients and sediment in stormwater runoff
 - Vegetated stormwater collection areas
 - Stormwater collection areas that allow water to soak back into the ground
 - Preserve and create forested areas

The Pollution Control Strategy

- Improved maintenance and performance of onsite wastewater treatment and disposal systems
 - Eliminates cesspools and seepage pits
 - Septic systems must be pumped out and inspected at sale; other documents to prove system is in good working order can be submitted to DNREC to satisfy requirement
 - Septic systems must achieve a specified level of performance which depends on system size, location, and age.

Performance Standard Nitrogen 3

- Performance standards for small systems (<2,500 gpd) shall be effective for all permit applications whose site evaluations have been submitted to the Department 60 days or more after the date of publication of the final Regulations when those sites lie within 1000 feet of the mean high water line of tidal waters or from their associated tidal wetlands shown on Delaware's 1992 SWMP Maps
- All complete permit applications received on or after January 1, 2015 for new and replacement systems throughout the Inland Bays Watershed shall comply with Section 8.4 (PSN3)



Questions?