

## BACKGROUND INFORMATION – SIGNIFICANT BAY WWTPs

- In regards to the wastewater sector, New York State's Watershed Implementation Plan targets "significant Bay" WWTPs. Significant Bay WWTPs have been designated as having a design capacity of 0.4 MGD or greater.
- 28 "significant Bay" WWTPs in New York State.
  - 26 municipal WWTPs
  - 2 industrial
  
  - Five WWTPs between 9 and 20 MGD
  - 7 WWTPs between 1 and 9 MGD
  - 16 WWTPs less than 1 MGD
  
  - Total combined design flows – 93 MGD
  - Total combined current flows – 74 MGD

- A number of New York's significant Bay WWTPs treat waste streams from dairy processing facilities, including the City of Hornell, Village of Waverly, and Kraft Foods Global WWTP (in Campbell).

- Interconnection with the agricultural community

- A number of New York's significant Bay WWTPs treat waste streams from other industries, including (for example) the following.

- The Town of Erwin's WWTP treats wastewater from a number of Corning Incorporated factories, as well as from Sullivan Park, Corning Incorporated's research and development facility.

- The Town of Owego treats wastewater from Samina Inc. and Lockheed-Martin.

# SOME BASICS OF WASTEWATER TREATMENT

- Biological processes are the heart of most wastewater treatment plants. Bacteria are utilized to treat the wastewater. Biological WWTPs are divided into two general groups.
  - Fixed film treatment plants
  - Activated sludge treatment plants
- Generally, WWTPs that utilized the activated sludge process have a better advantage to be retrofitted for nitrogen removal.
- The significant Bay WWTPs within New York State are of different ages and utilize a variety of different treatment processes.

- Nitrogen and phosphorus are nutrients and are key pollutants of concern in regards to the Chesapeake Bay restoration initiative.
  - Nitrogen is typically removed via biological treatment, where aqueous forms of nitrogen (ammonia and Nitrate) are converted to Nitrogen gas.
  - The means of treatment for the removal of phosphorus, being dependent upon the desired effluent concentrations required.

Effluent TP Conc.

0.8 to 1 mg/l  
 < 0.8 mg/l

General Treatment Processes

Chemical Treatment  
 Chemical Treatment/Filtration

As per the NYSDEC's Watershed Implementation Plan, the following effluent concentrations were committed to.

Total Nitrogen	8 mg/l
Total Phosphorus	0.5 mg/l

The following table summarizes potential impacts to annual operating costs for various WWTPs within the watershed.

<b>COST IMPACTS TO VARIOUS AREA WWTPS</b>					
<b>WWTP</b>	<b>CURRENT ANNUAL OPERATING BUDGET</b>	<b>PROJECT COST</b>	<b>INCREASE IN O &amp; M</b>	<b>INCREASED ANNUAL OPERATING BUDGET*</b>	<b>% INCREASE IN BUDGET</b>
Corning (C)	\$1,536,000	\$5,330,000	\$147,000	\$2,061,430	34
Chemung Co.	\$4,900,000	\$28,400,000	\$1,680,000	\$8,596,400	75
Hornell (C)	\$603,500	\$5,800,000	\$280,000	\$1,295,300	115
BEGWS	\$1,132,400	\$9,000,000	\$136,000	\$1,907,400	68
Canisteo (V)	\$320,000	\$3,630,000	\$63,400	\$641,130	100

\*-Debt service is based on a 5% interest rate and a 25-year term

## CASE STUDY: CANISTEO (V) WWTP

Permitted Capacity of WWTP-	0.7 MGD
Current Average Flows-	0.35 MGD
Population –	2336 people

From 1970 to 2000, the population of Steuben County declined by 826 people. Over this same period, the population of Canisteo (V) declined by 436 people.

Original WWTP was constructed in the 1940s, Upgraded to secondary treatment in 1972

WWTP was last upgraded in 1994-1995, when the Village pursued an innovative treatment process (a variation of the SBR process).

## WWTP performance

Effluent total suspended solids & BOD	<5 mg/l
Effluent Total Nitrogen	4 to 6 mg/l
Effluent Total Phosphorus	1 to 2 mg/l

## SUMMARY OF WWTP IMPROVEMENTS TO REDUCE EFFLUENT PHOSPHORUS

IMPROVEMENT DESCRIPTION	EFFLUENT TP (MG/L)	PROJECT COST	Δ ANNUAL O & M COST *
Chemical Treatment	1.0	\$873,000	\$6,670
Enhanced Bio P Removal/Chemical Treatment	1.0	\$860,000	\$6,000
Disc Filter System/Chemical Treatment	0.5	\$2,998,000	\$33,600
Disc Filter System/Chemical Treatment	0.1 to 0.2	\$3,629,000	\$63,400
Actiflo® System/Chemical Treatment	0.1 to 0.5	\$4,084,000	\$30,030 to 59,830**

•- Exclusive of debt service associated with project costs

•\*\* - This range of O & M costs reflects an associated range of effluent TP concentrations (from 0.5 mg/l to 0.2 mg/l).

## RELATIVE COST EFFECTIVENESS OF THE WWTP IMPROVEMENT ALTERNATIVES

IMPROVEMENT DESCRIPTION	TP REMOVED (LBS/YEAR)*	PROJECT COST	PROJECT COST (\$)/LBS TP REMOVED/YEAR**
Chemical Treatment	584	\$873,000	\$1495
Enhanced Bio P Removal/Chemical Treatment	584	\$860,000	\$1473
Disc Filter System/Chemical Treatment	1073***	\$2,998,000	\$2794
Actiflo® System/Chemical Treatment	1073***	\$4,084,000	\$3806

•- Sample Calculations re: TP removal beyond current TP effluent loadings:

For Chemical Treatment Alternative TP Removed = 0.32 MGD x (1.6 mg/l - 1.0 mg/l) x 8.34 = 1.6 lbs TP/day= 584 lbs TP/year (37.5% TP removal)

For Disc Filter System/Chemical Treatment Alternative  
 TP Removed = 0.32 MGD x (1.6 mg/l - 0.5 mg/l) x 8.34 = 2.94 lbs TP/day= 1073 lbs TP/year (68.8% TP removal)

\*\* - This estimate pertains to Edge-of-Stream reductions, as opposed to Delivered-to-the-Bay reductions.

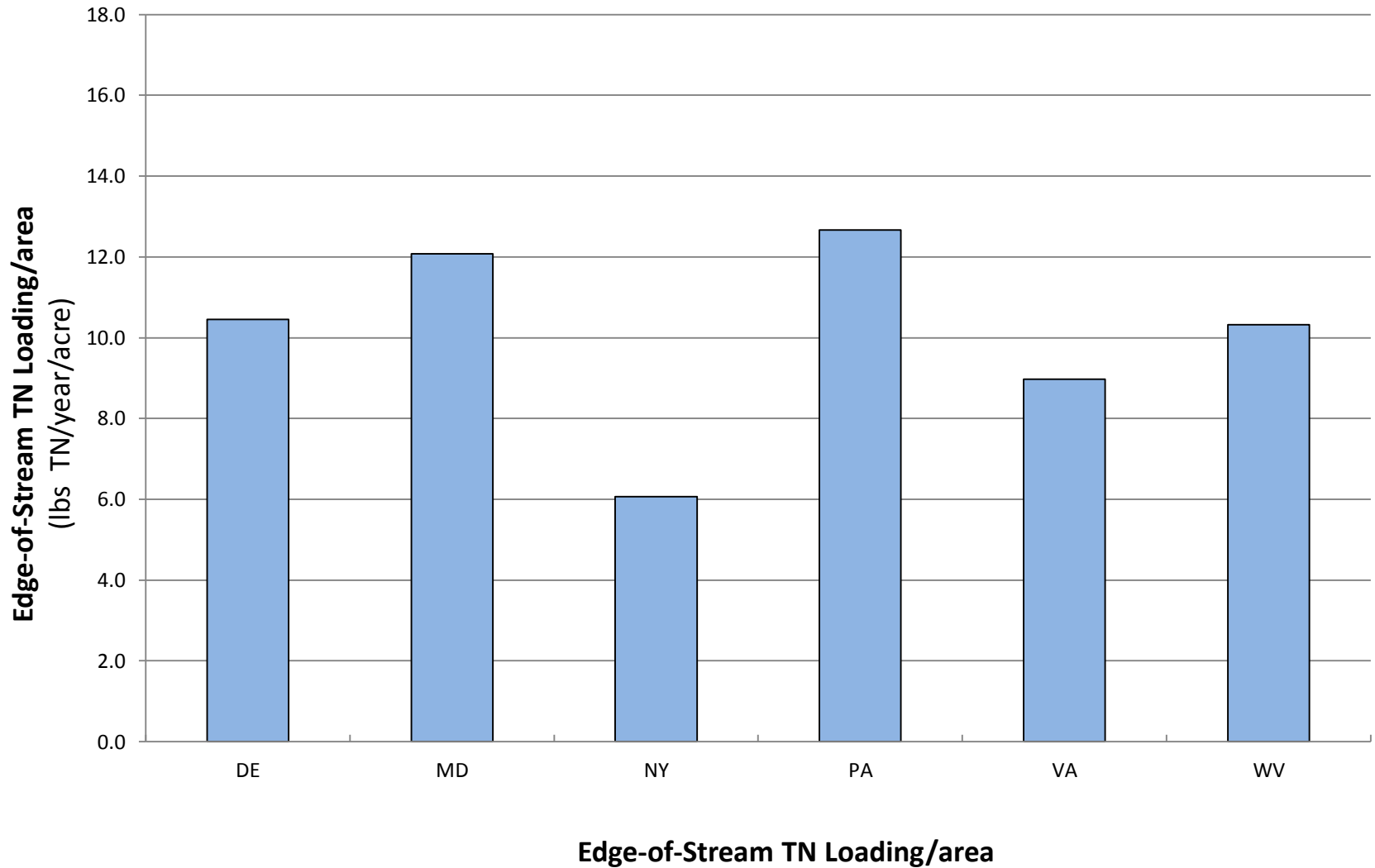
\*\*\* - Based upon an effluent TP of 0.5 mg/l

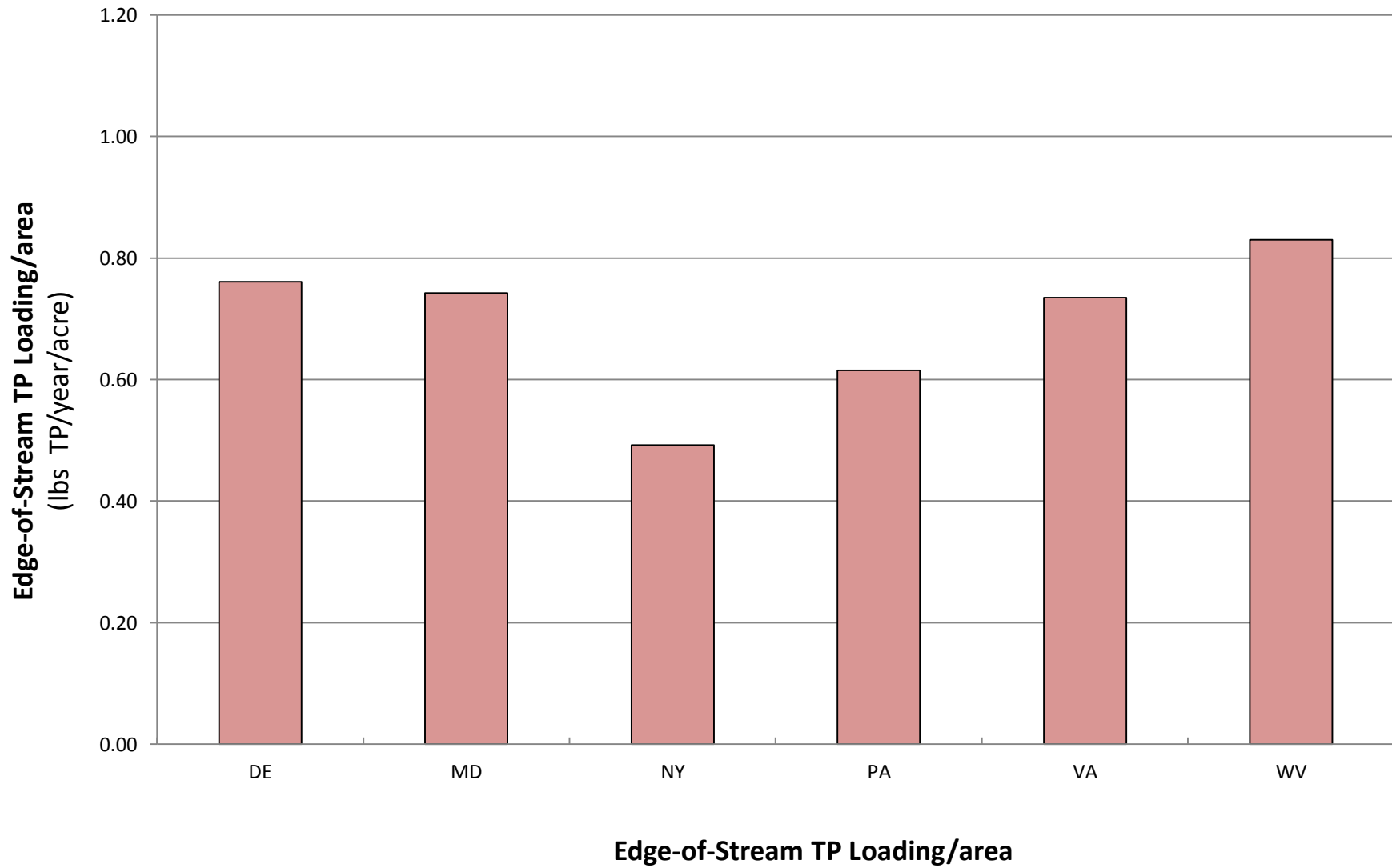
## FAIRNESS CONSIDERATIONS

1. If every state had New York's water quality (in regards to lbs of Nitrogen and Phosphorus per acre),
  - The Bay's "Pollution Diet" would not be exceeded
  - A TMDL would not be needed

Refer to the responses of EPA's Deputy Associate Administrator, Arvin Ganesan, to Congressman Reed's questions.

## 2. Our water quality is better than the other states





3. New York State (as represented by the NYSDEC) never accepted the nutrient loading allocation methodology that EPA used to distribute loadings to the individual states.
4. In the Final TMDL, the EPA employed a Backstop measure on New York State. Allowable nutrient loadings from WWTPs shall be based on current wastewater flows, as opposed to permitted wastewater flow rates. This speaks to our reserve capacity.
5. It is our understanding that a large surplus of unused, already built wastewater treatment plant capacity exists in certain southern Bay States. Furthermore, it is understood that Virginia and Maryland have a combined unused, surplus wastewater treatment capacity of approximately 650 MGD. Assuming an average per capita wastewater production of 100 GPD/person, this surplus capacity could accommodate an additional 6.5 million people within those states.

6. Since 1985, after the impairment of the Chesapeake Bay was identified and documented, New York State's baseline "no-action" nutrient loading has significantly decreased, while other states have grown (often dramatically) over this same period. This decline in New York's nutrient loading is attributed largely to the loss of population, farms, and industry, as well as effective conservation/stewardship programs.
  
7. The discharges from the 28 Bay-significant WWTPs in New York State to water tributary to the Chesapeake Bay have not resulted in any impairment of the New York receiving waters (as per the NYSDEC's Final Phase I Nutrient and Sediment Water Quality Improvement and Protection Plan (December 2010))

8. New York State is remote from the Chesapeake Bay and derives no direct economic or recreational benefits from the Bay, as opposed to states and jurisdictions that are contiguous to the Bay.
9. Given nutrient delivery factors and New York's remoteness to the Bay, it is more expensive for New York to remove a delivered pound of nitrogen or phosphorus than for locations closer to the Bay.

## Insufficient Progress

EPA will conduct oversight of the Watershed Implementation Plan and the states' progress towards meeting milestones. If progress is insufficient, EPA is committed to take appropriate contingency actions including

- targeted compliance and enforcement activities,
- expansion of requirements to obtain NPDES permit coverage for currently unregulated sources,
- revision of the TMDL allocations,
- additional controls on federally permitted sources of sources of pollution (such as WWTPs, large animal agriculture operations, and municipal storm sewers).