



Chesapeake Bay TMDL “A Tale of Two Models”

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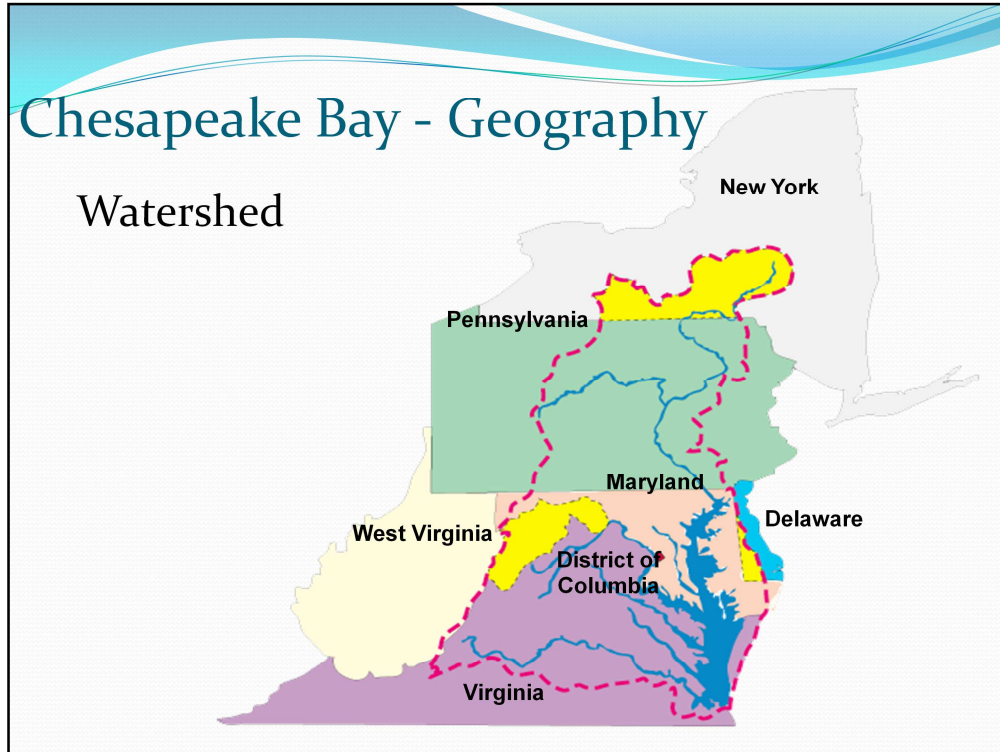


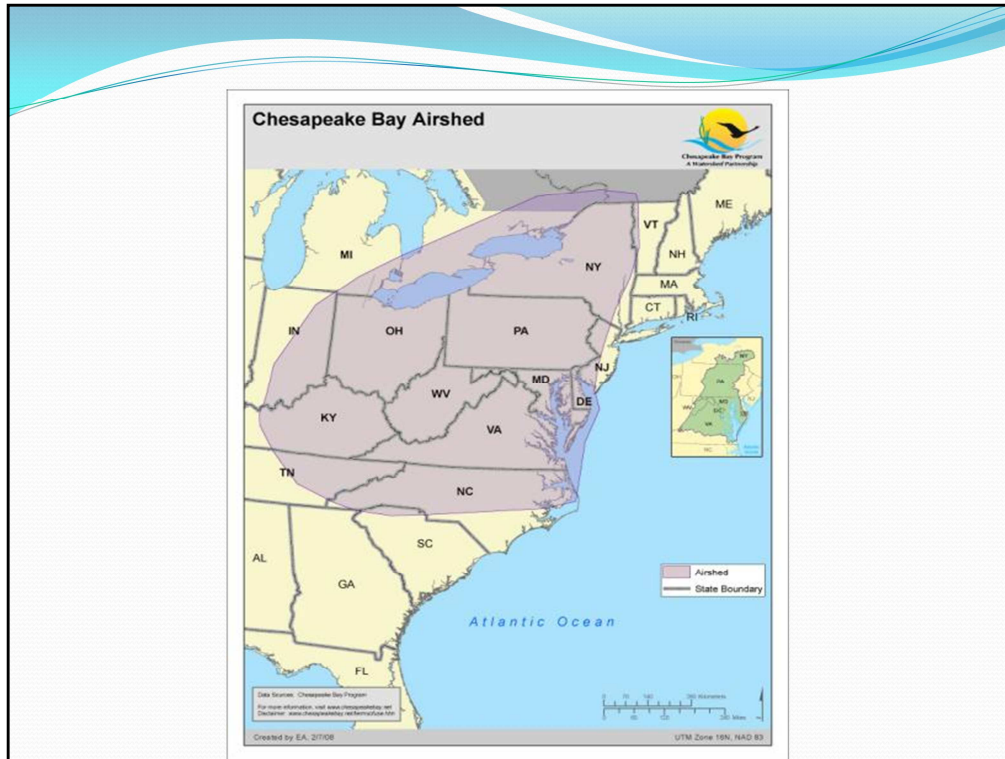
**“It was the best of times,
it was the worst of times.”**

Charles Dickens
Tale of Two Cities
1859

Chesapeake Bay - Geography

Watershed







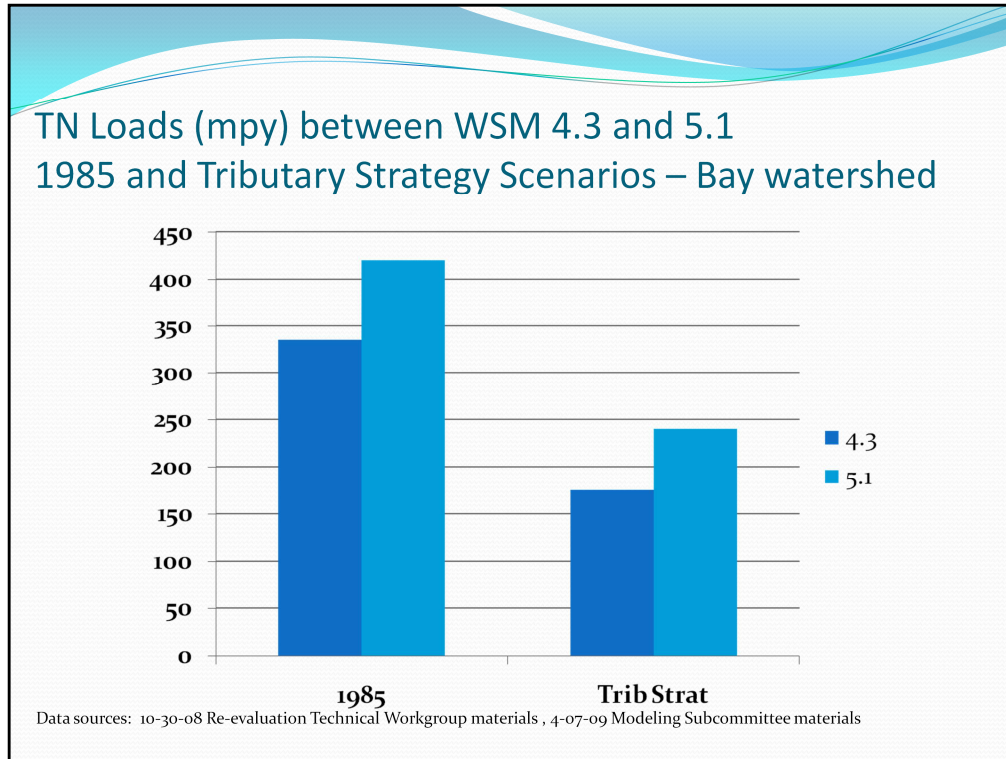
2005 Accomplishments

- Bay Modeling Done
- States Agree to Basin Allocations and Subdivide Between Sources
- VA Water Quality Management Regulations – PS Allocations Established
- VA General Assembly Takes Action
 - VA General Permit
 - VA Nutrient Trading Program
 - VA Water Quality Improvement Fund



2009 Reevaluation

TMDL Development



This graph shows the bay watershed TN loads for two scenarios: 1985 and Tributary Strategy

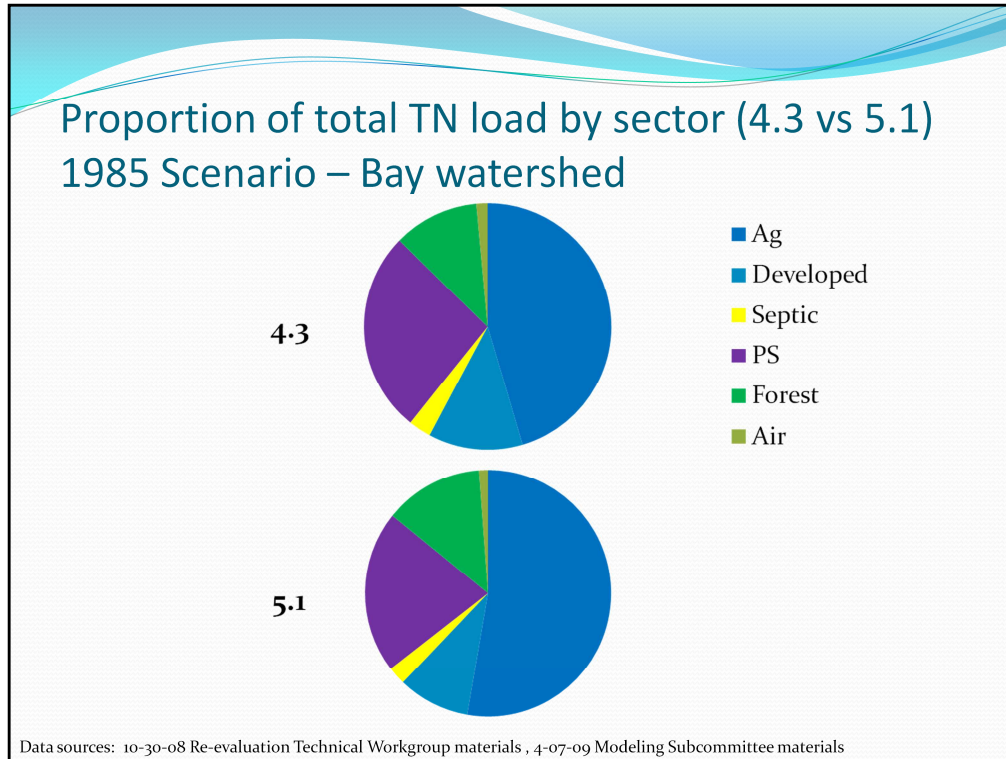
The blue bars show the loads estimated by WSM version 4.3 while the red shows WSM version 5.1

In both scenarios (1985 and Trib strat) version 5.1 simulates significantly higher loads than version 4.3

Previous analysis based on ver 4.3 indicated that bay WQS could be attained at around 175 mpy TN

Present analysis shows that something close to this number is still needed

Implication: The “old tributary strategies” will no longer achieve the 175 mpy TN value under 5.1



This graph shows the relative contribution of major sectors to total TN loadings in the 1985 reference scenario for versions 4.3 and 5.1 of the CBP WSM.

The comparison shows that the proportion of total loading due to Ag and forest has increased while that of PS and developed lands has decreased.

This result can be explained by the fact that the magnitude of Ag and forest loads have increased in version 5.1 while PS and septic are largely unchanged.

Implication: Higher Ag and forest loads (due to wetter hydrology) coupled with lower BMP efficiencies for many practices explain why tributary strategies no longer achieve 175 mpy TN.

Note: Ag includes



Modeling Changes

- Wetter 10 year period
- Lower NPS efficiencies (more conservative, less effectiveness)
- Finer model segmentation (to county level)
- Model scenario interpretation more stringent
 - Worst 3 year period vs 10 year period

Phased TMDL

- Regulatory stability vs. LOT for point sources
- NPS controls – further slackening
- 2 year implementation windows



Ecosystem Restoration vs. Nutrient TMDL

- Unrealistic Goals
- Sediment – not part of TMDL
- Filter Feeders – Top Down Controls
- Atmospheric Sources
- Urban Planning
- Conowingo Dam



NACWA Watershed Act