

# James River Chlorophyll Study

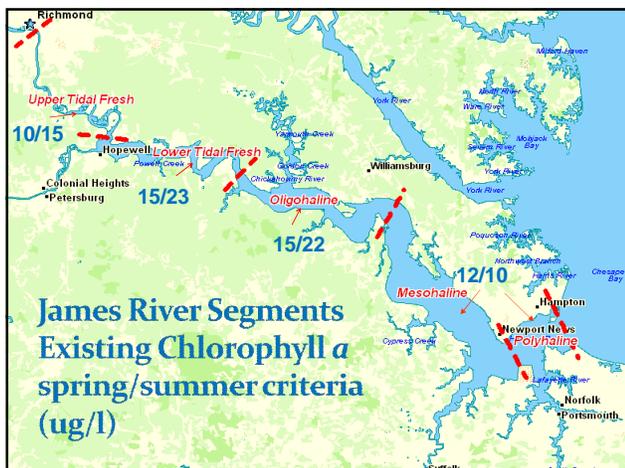
In Response To  
Chesapeake Bay TMDL



## Talk Outline

- Basis for Chlorophyll *a* Criteria – Summary of 2005 process
- VA Implementation Since 2005
- Impact of EPA's TMDL Allocations
- VA WIP/Bay TMDL Process
- Current Status

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## Need for Numeric Chlorophyll *a* Criteria

- James is eutrophic
- High chlorophyll levels
- High and increasing levels of undesirable species
- Unbalanced community composition
- Algal blooms
- James listed as impaired under CWA § 303
- Dissolved oxygen or water clarity criteria not driving nutrient reductions

## Virginia Regulations

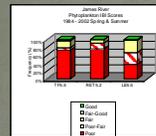
### Existing Before 2005

- **Designated Uses** - 9 VAC 25-260-10  
"...balanced, indigenous population of aquatic life..."
- **General Criteria** - 9 VAC 25-260-20  
"...undesirable or nuisance aquatic plant life..."
- **Nutrient Enriched Waters** - 9 VAC 25-260-330  
"...undesirable growths of aquatic plant life in surface waters..."

### Adopted in 2005 for All Bay Waters

- **Narrative chlorophyll a criterion** - 9 VAC 25-260-185  
"concentrations of chlorophyll a shall not exceed levels... undesirable... unsuitable... ecologically undesirable water conditions..."

## Basis for Chlorophyll a Numeric Criteria

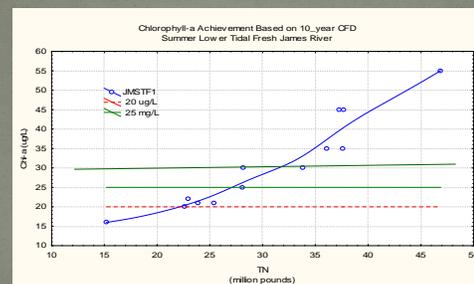


- Balance = Phytoplankton Index of Biotic Integrity (IBI), Diversity Indices
- Undesirable or nuisance aquatic plant life... = HAB, food quality issues
- Natural characteristics
- Attainability

## Attainability - Alternatives Analysis

- Alternative Loading Scenarios
- Levels of chlorophyll
- Attainability
- Environmental Benefits

## Alternatives Analysis Example



## Results of Alternatives Analysis

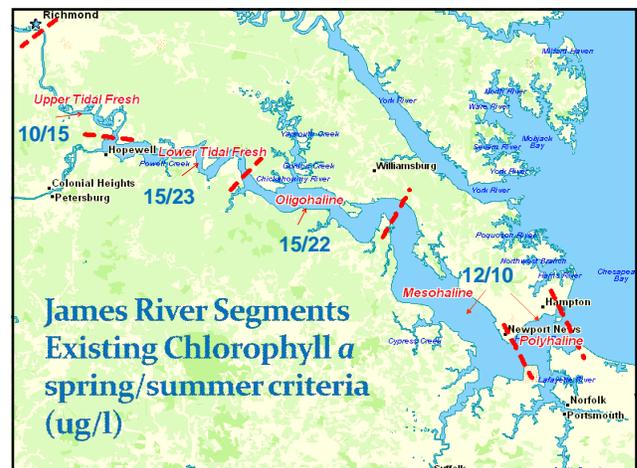
- Staff recommended adjustments to four of the ten criteria
- Criteria will lead to improved water quality
- Move toward better 'balance'
- Protect from harmful algal blooms
- Believe to be attainable

## Public Comment Received (in 2005)

- **Environmental** – must have numerical criteria; prefer the originally proposed criteria or close to the original criteria; no more delays.
- **Citizens** – reflect environmental comments.
- **Regulated** – concerns with scientific basis of criteria particularly in lower James; prefers upward adjustments of criteria; cost too high; benefits not clear or measurable.

## DEQ Responses / Conclusions

- There is a need to set numerical criteria in the tidal James River.
- Setting chlorophyll criteria is not as quantitatively precise as the dissolved oxygen or water quality recommendations.
- Attainability can be used to focus in on a criterion value that will remain protective of designated uses based on the available scientific findings



## VA Implementation since 2005

- Non-point source actions taken based on Tributary Strategies
- Point source actions based on nutrient caps adopted by the SWCB adopted in 2005 and included in the Watershed General Permit
- Over \$400 million expended for plant upgrades

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## Impact of EPA TMDL Allocations

- Set nutrient load caps for all river basins throughout Bay watershed
- EPA set cap for James basin much lower than VA had expected when EPA approved chlorophyll standard in 2005
- Impact estimated to add \$1-2 billion to nutrient reduction costs
- VA conclusion: let's make sure first

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## VA WIP/Bay TMDL Process

- VA Phase I WIP – November 2010
  - Describe d VA concerns with allocations
  - Outlined need for study of existing chlorophyll criteria and review of modeling framework
  - Presented staged implementation approach for point source discharges in James Basin
- EPA Agreed with approach
  - Included Staged Implementation in Appendix X of Chesapeake Bay TMDL – December 2010
  - Tacit recognition that VA is reviewing chlorophyll criteria

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## James River Basin Two Track Approach

### Staged Implementation

- VA Phase I WIP outlines nutrient reduction actions to achieve TMDL Implementation 60% reduction target by 2017
- Additional reductions scheduled after 2017 Phase III WIP

### Scientific Study with Standards Adjustment

- Conduct 3-4 year additional scientific study to provide a more precise and defensible basis for setting chlorophyll standard
- Revise standard/TMDL by 2017, as appropriate

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## Status: Implementation

- Proposed revisions to Watershed General Permit for wastewater discharges conforms to Bay TMDL
- Comment period ended July 22; presentation to State Water Control Board this fall
- Revised Permit due to be effective January 1, 2012

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## Status: Scientific Review

- Additional scientific study to provide a more precise and defensible basis for setting final nutrient allocations
- DEQ contracted with VCU to assist in managing study and Science Advisory Panel; first meeting – August 22
- Designing future data collection efforts
- Working to complete detailed work plan for study
- Initiating Rulemaking process – to help ensure schedule is achieved; NOIRA under Executive Review; plan to set up Regulatory Advisory Panel

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## Questions & Discussion

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