VA's James River Chlorophyll Study

In Response To
Chesapeake Bay TMDL

Goal

- Revisit the James River TMDL allocations (Appendix O & X, Bay TMDL)
  - Develop a site specific James River water quality model
  - Re-assess attainability of chl-a criteria
- Review and confirm/adjust James River chl-a standard
  - Conduct scientific study to review basis for setting chlorophyll standard
  - Scientific panel to make recommendations

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

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…"

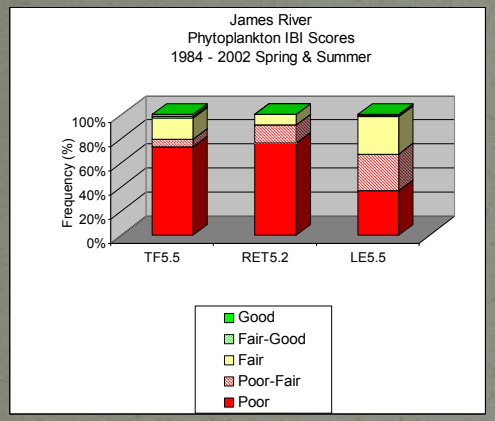
Adopted in 2005 for All Bay Waters

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

Need for Numeric Chlorophyll-*a* Criteria

- Tidal James River is eutrophic
- High and increasing levels of undesirable algae
- Annual algal blooms
- Unbalanced community composition
- Listed as impaired under CWA § 303
- Dissolved oxygen or water clarity criteria not driving nutrient reductions

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

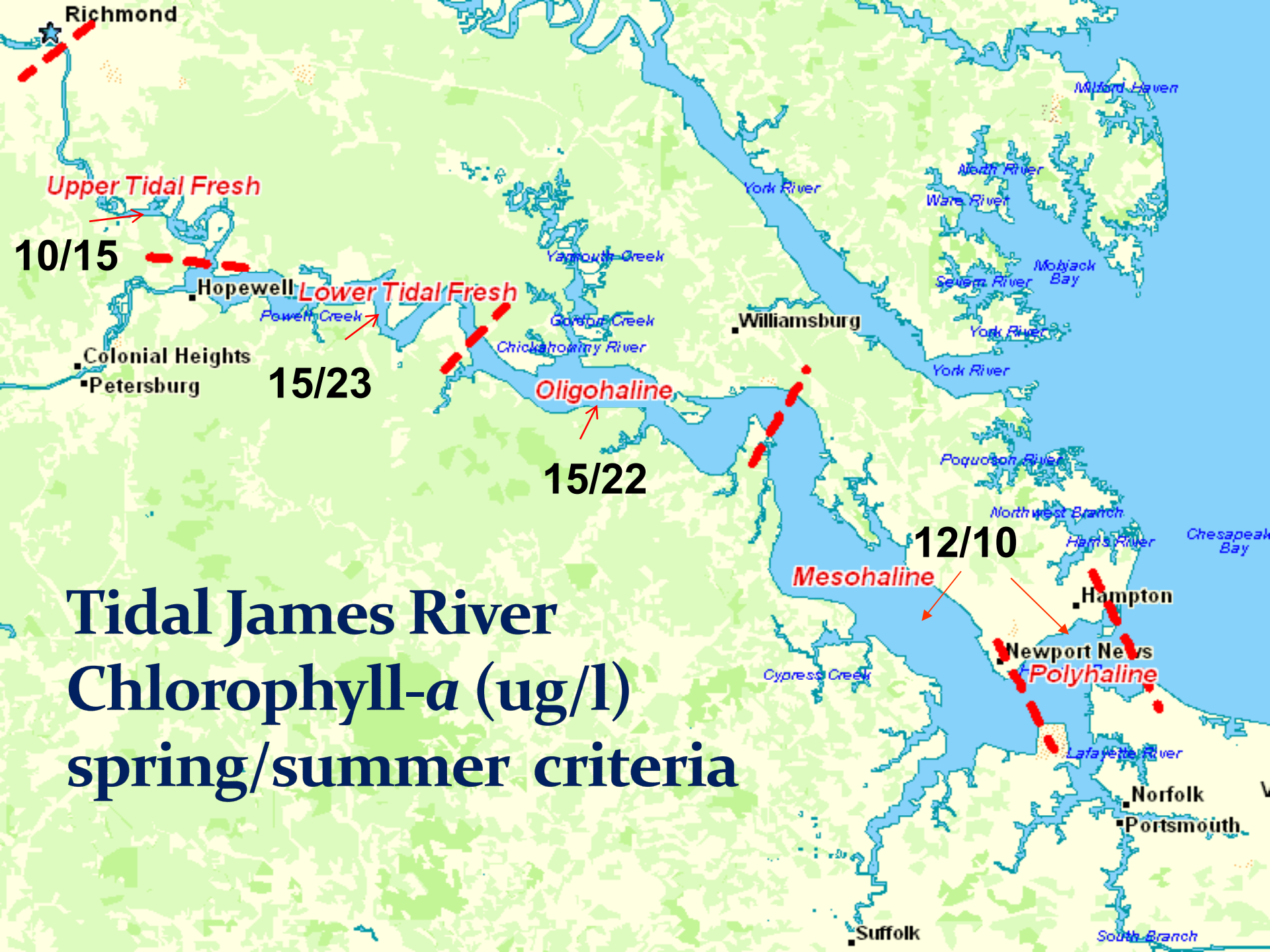
- Alternative Loading Scenarios
- Levels of chlorophyll-a
- Attainability
- Environmental Benefits

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

- Set numerical criteria in the tidal James River
- Chlorophyll criteria not as quantitative as the dissolved oxygen recommendations
- Attainability can be used to narrow a criterion value while being protective of designated uses based on the available scientific findings



Tidal James River Chlorophyll-*a* (ug/l) spring/summer criteria

Impact of EPA TMDL Allocations

- Set nutrient load caps for all Bay river basins
- TMDL set cap much lower for James River basin than EPA approved with chlorophyll standard in 2005 (Appendix X, Bay TMDL)
- Impact estimated to add $1-2 billion to nutrient reduction costs
- VA conclusion: let's make sure first

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
  - Staged Implementation in Appendix X of Chesapeake Bay TMDL – December 2010
  - Recognition that VA is reviewing chlorophyll criteria

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 Review

- Conduct 3-4 year scientific study to review basis for setting chlorophyll standard & make recommendations
- Revise standard/TMDL by 2017, as appropriate

Status: Scientific Review

- Scientific study to review basis for setting final nutrient allocations
  - Contract to assist in managing study and Science Advisory Panel
- Completed detailed monitoring & modeling work plan
  - James River modeling contract awarded 3/12
  - James River monitoring contracts underway
    - algal bloom characteristics and
    - linking blooms to designated uses
- Begin Rulemaking process – NOIRA issued; Regulatory Advisory Panel (TBD)

JR Chl-a Study Schedule

2011	Workplan Development
2012	Workplan Implementation
2012-14	Monitoring and Modeling
2015	Assessment Review and Panel Recommendations
2016	Develop Regulatory Proposal (DEQ, if warranted)
2017	Complete WIP III Complete Regulatory Review

http://www.deq.virginia.gov/Programs/Water/WaterQualityInformationTMDLs/WaterQualityStandards/RulemakingInfo.aspx#James_Chl_A_study

Questions & Discussion

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