

Potential Applications of New Potomac Estuary Model

July 11, 2011

1983 Algae Bloom

- Revisit Algae Bloom Expert Panel Hypotheses
 - pH-enhanced sediment phosphorus flux
 - low alkalinity in the estuary, in Blue Plains effluent
 - uniqueness of event from environmental condition standpoint
- Examine whether sediment phosphorus has been exhausted due to reduced point source loadings
- Evaluate Algae Bloom Expert Panel control recommendations
 - Phosphorus removal to limit of technology
 - Nitrogen removal
 - Upstream (above fall-line) loading controls
- Answer question - could the 1983 bloom ever happen again?
- Answer question - will low levels of nitrogen removal promote blooms of Nitrogen fixing blue-green algae?

Potomac Estuary Water Quality Since 1983

- Evaluate Potomac estuary water quality since 1983 and impact of control program (low phosphorus effluent limits at WWTPs, reduced nitrogen loadings at WWTPs, changes (if any) in upstream loadings)

Chesapeake Bay TMDL Requirements

- Assess Potomac estuary water quality under Chesapeake Bay TMDL - compare to Bay-wide model
- Evaluate relationship between upstream control program and bottom water dissolved oxygen levels
- Evaluate lower levels of nitrogen/phosphorus control at WWTPs
- Evaluate refractory nitrogen question for Blue Plains effluent

District of Columbia pH TMDL

- Assess control program required to meet DC pH standard/TMDL

Research/Monitoring

- Use model to help define additional research/monitoring for sediment flux, water column parameters