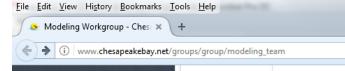
# CBP Draft Phase 6 Watershed Model

Gary Shenk – USGS - Chesapeake Bay Program

Presentation to MWG

6/15/16

This information is being provided to meet the need for timely best science. The information is provided on the condition that neither the U.S. Geological Survey nor the U.S. Government shall be held liable for any damages resulting from the authorized or unauthorized use of the information.



# Draft Phase 6 Released 6/1



Workgroups & Task Groups Projects & Resources

Publications

C Q Search

#### Draft Phase 6

This project page is the repository for the Phase 6 model, its documentation, as well as files and links to Tableau pages. Please email Kyle Hinson (khinson@chesapeakebay.net) with any questions you may have.

#### Documentation

All documentation files will be uploaded to this FTP site to assist in partnership review of Phase 6: ftp://ftp.chesapeakebay.net/modeling/Phase6/Draft Phase 6/Documentation/

#### Calibration

A summary PDF of calibration results has been generated and is available for download (large file): ftp://ftp.chesapeakebay.net/modeling/Phase6/Draft\_Phase\_6/Watershed\_Model/WSM\_Outputs/Calibration\_Figures //00 Calibration Figures All Phase6Draft.pdf

Other detailed calibration results for each calibrated parameter and river segment can be found in a separate FTP folder: ftp://ftp.chesapeakebay.net/modeling/Phase6/Draft\_Phase\_6/Watershed\_Model/WSM\_Outputs/Calibration\_Figures/

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Further comparisons between the Watershed Model and WRTDS can be found at the non-tidal dashboard. These visual representations show both the loads estimated from monitoring data (WRTDS) and loads estimated from the Draft Phase 6 Model: http://cast-beta.chesapeakebay.net/documentation/NonTidalWaterQualityDashboard

#### Land Use Data

Land use files can be found at this FTP site: ftp://ftp.chesapeakebay.net/Modeling/Phase6/Draft\_Phase\_6/Land\_Use/

#### Watershed Model Inputs

Links to the sites for Watershed Model Inputs can be found at these web pages:

CAST Homepage (Note: The Phase 6 CAST Beta will be directed here until June 15); http://cast-beta.chesapeakebay.net/

Phase 6 Soil Phosphorus Figures: ftp://ftp.chesapeakebay.net/Modeling/soil-p-history/fig/

#### Model Review Process

The process by which the partnership can most effectively submit comments and provide feedback to the development of the Phase 6 model will be outlined in a continuously updated document found below. The schedule of upcoming webinars is also provided below. Please contact Lewis Linker (Ilinker@chesapeakebay.net) or Kyle Hinson (khinson@chesapeakebay.net) with any questions.

Phase 6 Sediment Simulation Webinar: April 19, 2017, 1 PM - 3 PM (webpage link, recording link)

Phase 6 Integrated Models and Decision Framework Overview Webinar: May 9, 2017, 1 PM - 3 PM (webpage link, recording link)

Phase 6 CBP Model Poultry Data Webinar: May 24, 2017, 1 PM - 3 PM (webpage link, recording link)

Phase 6 Inputs Webinar: May 25, 2017, 1 PM - 3 PM (webpage link, recording link)

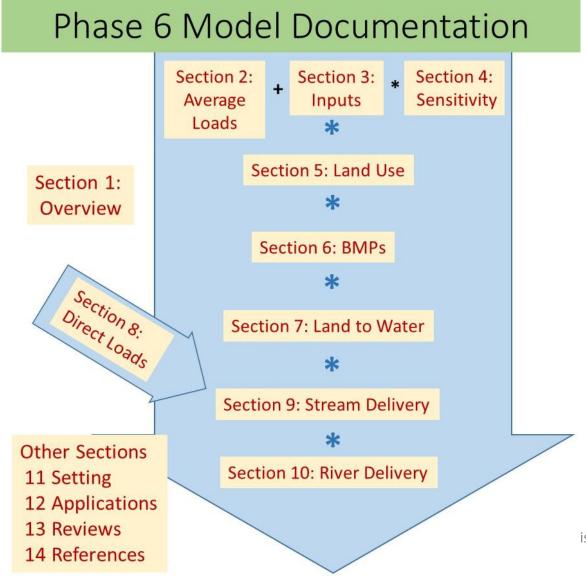
Phase 6 Loads Webinar: June 1, 2017, 1 PM - 3 PM (webpage link, recording link)

Phase 6 Physical Transport Webinar: June 20, 2017, 1 PM - 3 PM (link)

Phase 6 Approval Process (622.55 KB) 🔼

Draft Phase 6 Watershed Model - Summary Statistics (3.35 MB)

### Documentation



#### **Documentation**

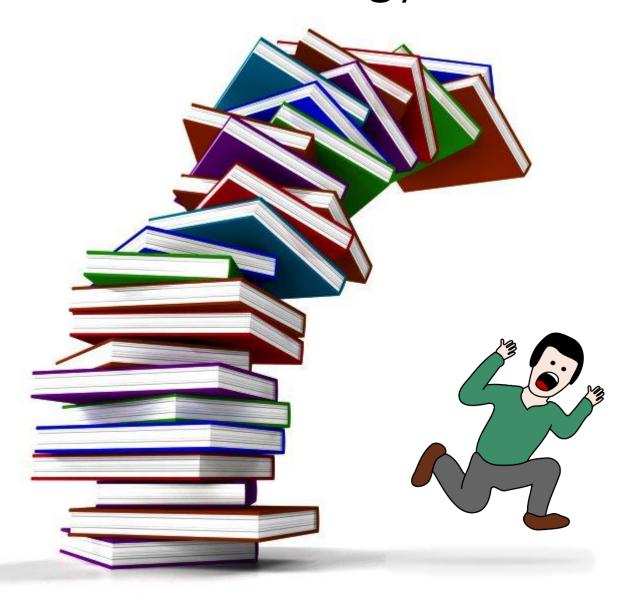
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https:// archive.chesapeakebay.net/m odeling/Phase6/ Draft\_Phase\_6 / Documentation/

504 pages of documentation 405 pages of appendices

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# Review Strategy



# Review Strategy

- Read Chapter 1
- Target Chapters and Sections that are important to you

- Main Prediction of CAST for decision support: Change in Anthropogenic Load
  - BMPs
  - WWTP
  - Land use Change
  - Response to Change in inputs

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# Review Strategy

- Read Chapter 1
- Target Chapters and Sections that are important to you

- Main Prediction of CAST for decision support: Change in Anthropogenic Load
  - BMPs
  - WWTP
  - Land use Change
  - Response to Change in inputs

### Calibration

#### **Calibration**

A summary PDF of calibration results has been generated and is available for download <a href="https://archive.chesapeakebay.net/modeling/Phase6/Draft\_Phase\_6/Watershed\_Mode">https://archive.chesapeakebay.net/modeling/Phase6/Draft\_Phase\_6/Watershed\_Mode</a> <a href="https://www.lysnet/modeling/Phase6/Draft\_Phase\_6/Draft\_Phase\_6/">https://archive.chesapeakebay.net/modeling/Phase6/Draft\_Phase\_6/</a> <a href="https://www.lysnet/modeling/Phase6/Draft\_Phase\_6/">Watershed\_Mode</a> <a href="https://www.lysnet/modeling/Phase6/Draft\_Phase\_6/">https://www.lysnet/modeling/Phase6/Draft\_Phase\_6/</a> <a href="https://www.lysnet/modeling/Phase6/Draft\_Phase\_6/">https://www.lysnet/modeling/Phase6/Draft\_Phase\_6/</a> <a href="https://www.lysnet/modeling/Phase6/Draft\_Phase\_6/">https://www.lysnet/modeling/Phase6/Draft\_Phase\_6/</a> <a href="https://www.lysnet/modeling/Phase6/Draft\_Phase\_6/">https://www.lysnet/modeling/Phase6/Draft\_Phase\_6/</a> <a href="https://www.lysnet/modeling/Phase6Draft.pdf">https://www.lysnet/modeling/Phase6/Draft\_Phase6/Draft\_Phase6Draft.pdf</a> <a href="https://www.lysnet/modeling/Phase6Draft.pdf">https://www.lysnet/modeling/Phase6Draft.pdf</a>

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https://archive.chesapeakebay.net/modeling/Phase6/Draft\_Phase\_6/Watershed\_Model/WSM\_Ou tputs/Calibration\_Figures/

Further detailed calibrated output for the watershed can be found in csv files located at this FTP site:

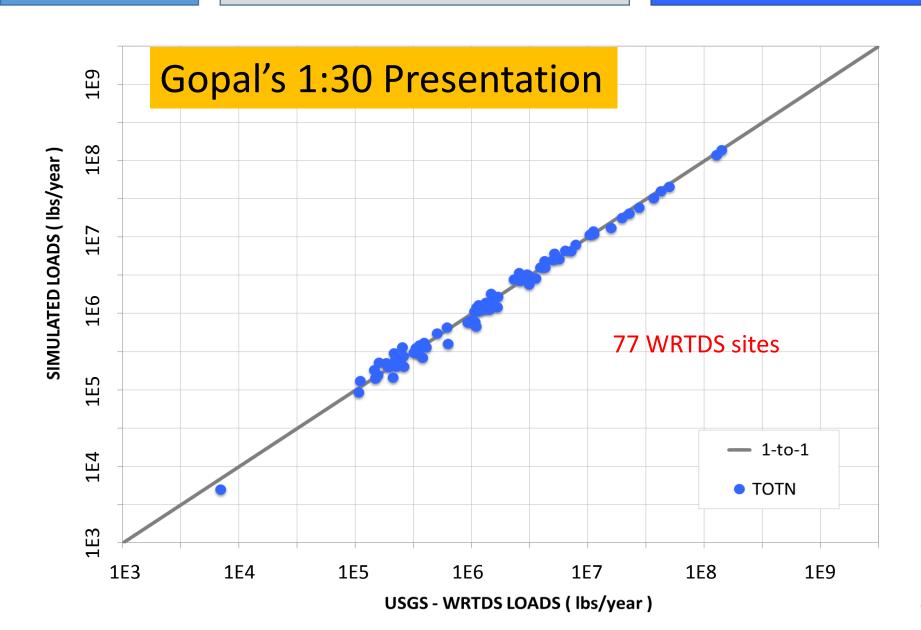
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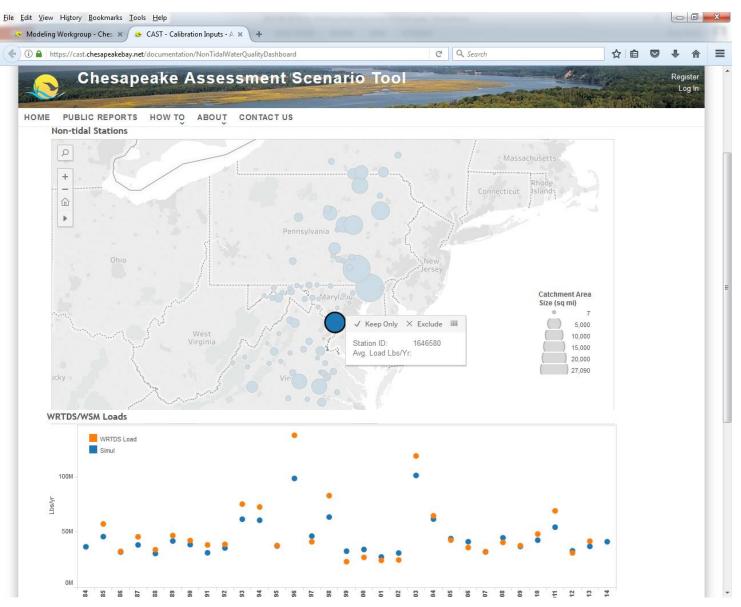
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# Revised inputs, model refinements, and calibration methods

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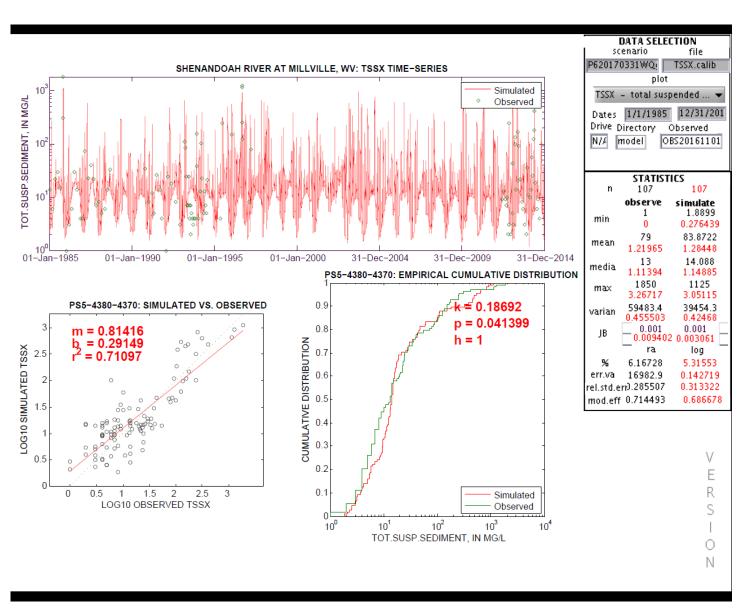


# Calibration



Comparison of WRTDS and WSM Annual Loads

### Calibration

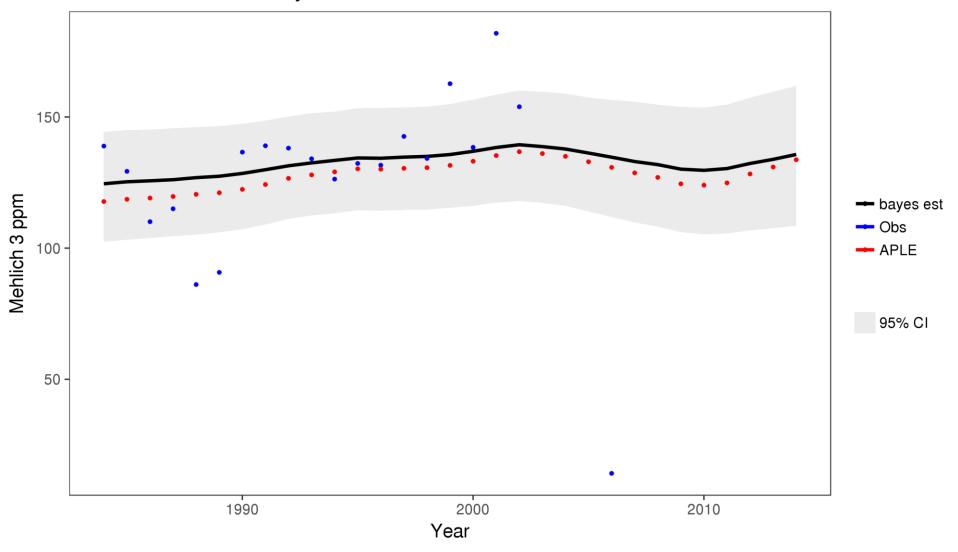


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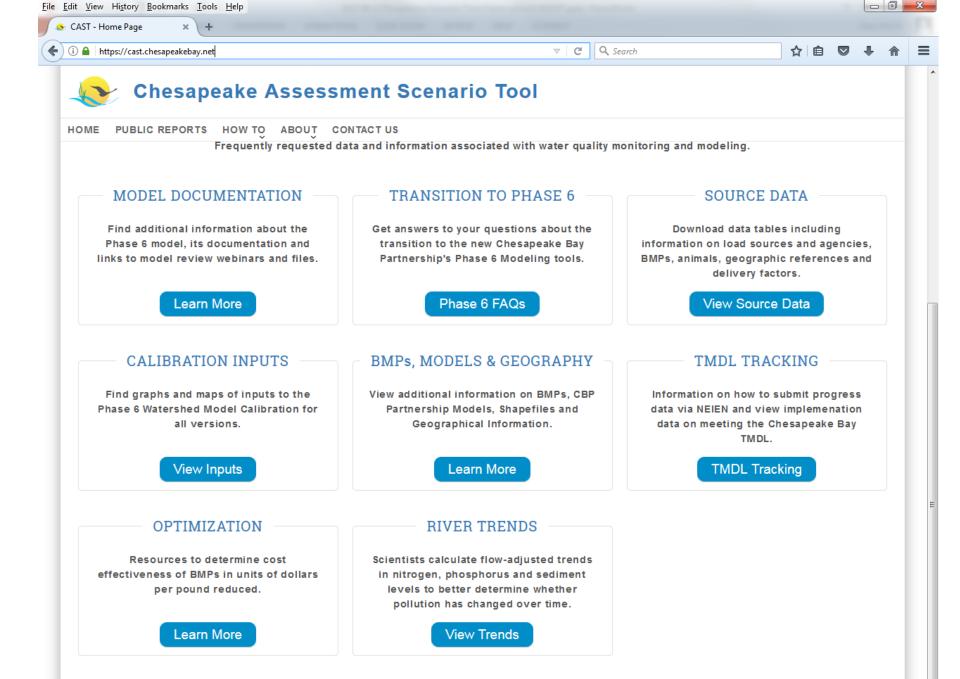
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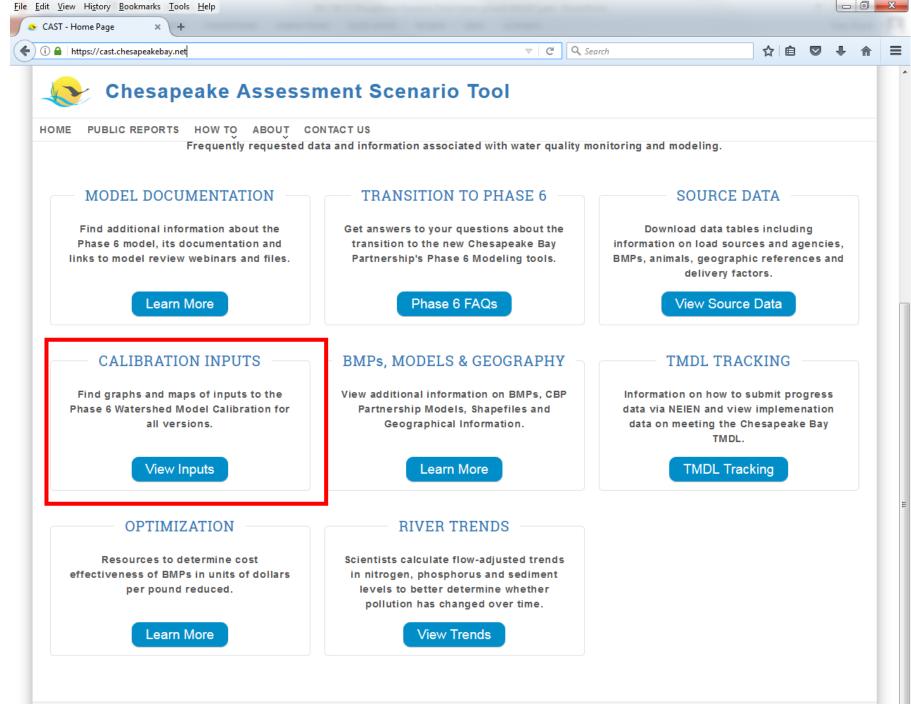
- Land use files can be found at this FTP site:
  - https://archive.chesapeakebay.net/Modeling/Phase6/
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- Phase 6 Soil Phosphorus Figures:
  - https://archive.chesapeakebay.net/Modeling/soil-phistory/fig/
- CAST Homepage (Note: The Phase 6 CAST Beta will be directed here until June 15):
  - http://cast.chesapeakebay.net/

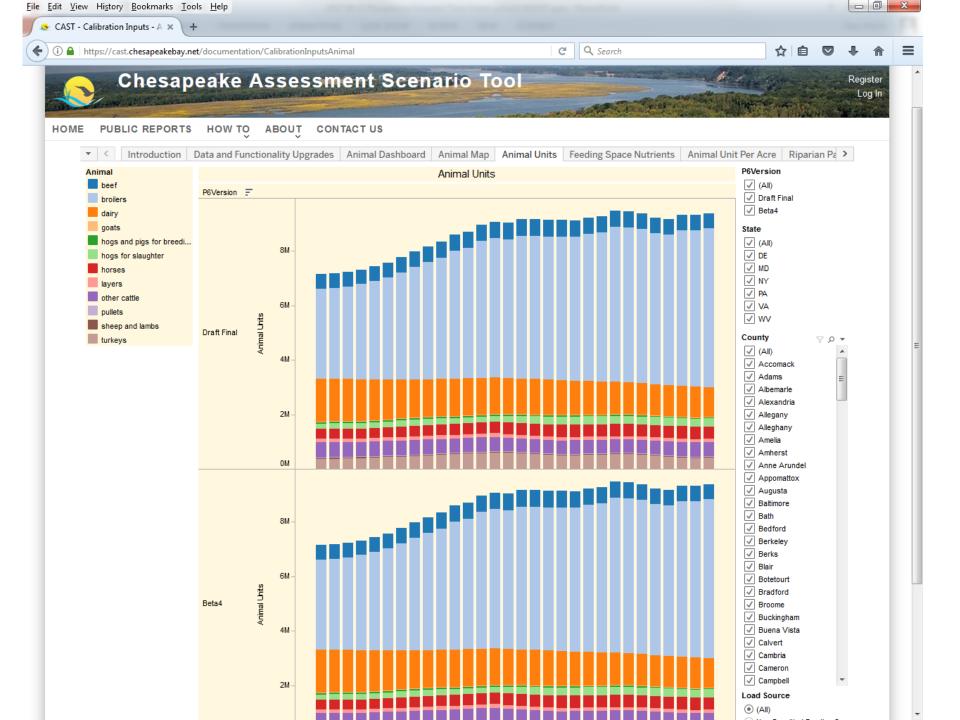
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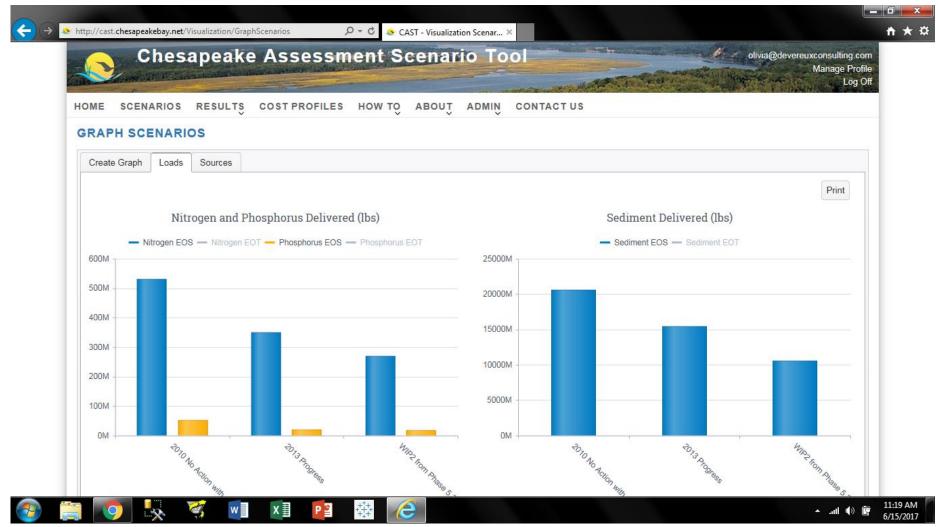
Double Crops in Somerset County, Maryland







# CAST Scenarios — Today!!!



# Partnership Feedback

- Email to Gary Shenk, Matt Johnston, and/or Lewis Linker
- Different types of feedback
  - Question
    - simple email or phone call
    - not tracked
  - Discussion
    - Series of emails or calls
    - Emails saved and summarized in posted document
  - Proposed Fatal Flaw
    - After discussion
    - Raised to CBP workgroup as proposed fatal flaw
    - Tracked and recorded

### Fatal Flaw Review

- June and July Partnership 'Fatal Flaw' Review
  - Criterion #1 problem with the model
    - Failure to follow partnership instructions
    - Omission of data received by 12/31/2016
    - Overall failure of calibration
    - Illogical results

### **AND**

- Criterion #2 Significant impairment in the ability to
  - Set planning targets
  - Assess progress

### Received so far

- VA: hi-res land use
  - Identified as a fatal flaw by the WQGIT
- VA: animal numbers under discussion
- Fairfax County: 1987 input values
  - fixed prior to Draft Phase 6
- MDA: Testing Benefits of nutrient management
  - Discussion Exercising CAST
- MDA: Using Crop uptake and crop removal
  - Discussion in AMS
- MDA: Issues for modeling soil P in future scenarios
  - Discussion in AMS

### Documentation

- June 1 documentation is finalized
  - Comments may be added to PDFs
  - Additions and Errors document periodically updated
- Edits being made to Final Phase 6 documentation
  - Available on request

### Schedule – Watershed Model

April – July Input Review

June 1 Calibration and Documentation

June 15 Scenarios

• June and July Draft Phase 6 review

July STAC finalizes review

August Resolution of any fatal flaws

August Response to STAC review

August 14 WQGIT decides on Schedule

September 1? Final Phase 6

### Schedule – WQSTM

June-July Partnership Review

• July 1 Interim calibration

July STAC finalizes review

August 1 Final calibration

August Response to STAC review

August 14 WQGIT decides on Schedule

September 15? Final WQSTM

