

EPA response to hydrodynamic workshop and subsequent letters

Gary Shenk

3/27/2012

Overall Response

- Broad agreement from EPA and the Management Board with the recommendations and the principles behind them
- Also recognize that CBP is involved in a regulatory process and must consider schedules, competing budget priorities, and the issue of how to implement multiple management models in a TMDL context

1. Use multiple models to provide better confidence in model output and uncertainty estimates

- We agree and are starting to do this
 - Hydrodynamic workshop results
 - Possible Gunston Cove RFP
 - Watershed: CBP model compared to and built with Sparrow and CB-CEAP models
- Need to think very carefully about regulatory implications in the Chesapeake and elsewhere

2. Use open source community models so that many modelers can sift through the model to find different computational approaches and errors. Using open source models would also increase the confidence in the models among the scientific community

- We agree and are well on our way
 - CBP WSM was first model on CCMP site
 - All CBP models documented and available
- Looking forward to working with STAC on access improvements

3. Allow the scientific community to evaluate the skill of all future models quantitatively.

- We agree ...
 - Many instances of scientific community evaluating models and output, including quantitative skill assessment, which have lead to improvements
 - Will continue to make model output available
 - Current Gunston Cove RFP plans
- But not the only criterion
 - Operations
 - Flexibility
 - Sensitivity
 - Coupled WQ model DO prediction

4. Implement models in a modular fashion so they can be easily used and tested inside and outside the CBP

- We agree and have a good start
 - Watershed model is modular
 - HSPF is the model, Phase 5 is the modular system
 - Watershed model currently loads many models
 - Agreement to work with CSDMS

5. Form a virtual Chesapeake Modeling Laboratory to enable the successful implementation of the recommendations above

- We don't know yet if we agree
 - Action Team being formed to evaluate multiple options for forming a modeling lab.

10/21/2011 and 1/18/2012 Letters

**1. Quantitative skill assessment for all models –
pilot in Gunston Cove**

**2. Direct part of budget toward multiple models to
build confidence in regulatory models**

- Working on Gunston Cove RFP
 - STAC workshop provide EPA guidance for planned RFP
 - EPA must select recipients for any RFP but can be based, in part, on workshop guidance
- Budget decisions made by EPA and partnership based on many factors
- Model spending decisions based on value that the partnership expects

Overall Response is Yes ... but ...

- Let's talk it over in a workshop! “Multiple Management Models” (M3)
- Science Questions
 - What are the different ways to use M3?
 - Application Stage: Averaging, Ensemble, Validation ...
 - Calibration Stage: Calibration, Validation ...
 - Development Stage: Conceptualization, Parameterization, Validation ...
 - What are the scientific benefits?
 - Confidence, characterization of uncertainty, identification of outlier predictions
- Management Questions
 - Has M3 been used in a regulatory setting and how did that work out?
 - Water rights? Air quality? TMDLs, most importantly?
 - What benefits and challenges would there be for the Chesapeake TMDL?
 - The story so far with M3 in the Chesapeake TMDL
 - Regulatory and legal
 - Practical and operational
 - Communications
 - Would it be harder or easier for the jurisdictions, localities, and the public to access, use, and understand these modeling tools?