

APPENDIX E

TRADABLE LOADS TO AVOID LOCAL TIDAL WATER QUALITY IMPACTS

The following summary was developed by CBPO in October 2011 to address the issue of tradable loads.

Documentation Supporting A Range Of Nitrogen And Phosphorus Loads Which Could Be Reasonable Traded Across Basins Without Local Tidal Water Quality Impacts

One of the key findings from the extensive technical evaluations supporting the 2010 Chesapeake Bay TMDL allocations (EPA, 2010) was that a select set of Chesapeake Bay Program segment-designated uses drove the final basinwide loading caps on nitrogen and phosphorus. These five segment-designated uses were: CB4MH deep water, CB4MH deep channel, MD5MH deep water, CHSMH deep channel, and EASMH deep channel. The other 103 segment-designated uses were simulated to come into attainment of their respective dissolved oxygen criteria at basinwide loads higher than the final basinwide loading caps.

Under the suite of scenarios run using the Phase 5.3.2 suite of Chesapeake Bay watershed and tidal water quality/sediment transport models, at basinwide nitrogen and phosphorus loadings of 200 and 14.7 million pounds, respectively, only the above five segment-designated uses did not attain their respective dissolved oxygen criteria (Phase 5.3.2, 2011). Further, there is clear evidence that water quality conditions within these five segment-designated uses are influenced by nutrient loads throughout the Chesapeake Bay watershed due to their centralized location within the middle Chesapeake Bay.

Therefore, at least 9 million pounds of nitrogen and 200,000 pounds of phosphorus (the difference between the up above described loads and the Phase II basinwide loading targets published by EPA on August 1, 2011), could be traded among the major river basins without concern about impacting local tidal water quality conditions (e.g., violating dissolved oxygen standards) and still likely achieve the applicable dissolved oxygen criteria in the remaining five segment-designated uses.

Given the next higher loading scenario above the 200/14.7 million pounds nitrogen and phosphorus scenario was loadings of 261/18.8 million pounds nitrogen and phosphorus and the resultant dissolved oxygen criteria attainment results, up to 20 million pounds of nitrogen and 1 million pounds of phosphorus could likely be traded across basins without impacting local tidal

water quality conditions. The location of the reductions would, however, likely influence achievement of the applicable dissolved oxygen criteria in the remaining five segment-designated uses depending on the specific river basin(s) where the loads were coming from.

All these findings are based on evaluation of existing model scenario results and extensive technical evaluations documented within the 2010 Chesapeake Bay TMDL. The potential effects of any set of trades among major river basins on Bay water quality should ultimately be confirmed through application of the appropriate model scenarios.

Reference

U.S. Environmental Protection Agency. 2010. *Chesapeake Bay Total Maximum Daily Load for Nitrogen, Phosphorus and Sediment*. Philadelphia, PA: EPA.

June 2011 Phase 5.3.2 Chesapeake Bay water quality scoping model scenario dissolved oxygen criteria attainment ‘stoplight’ results as presented to the Chesapeake Bay Program’s Water Quality Goal Implementation Team.