Comment Response Document
Regarding the Total Maximum Daily Load of Sediment in the Youghiogheny River Watershed, Garrett County, Maryland

The Maryland Department of the Environment (MDE) has conducted a public review of the proposed Total Maximum Daily Load (TMDL) of Sediment in the Youghiogheny River Watershed, Garrett County, Maryland. The public comment period was open from July 27, 2006 through August 28, 2006. MDE received 1 set of written comments.

Below is a list of commentors, their affiliation, the date comments were submitted, and the numbered references to the comments submitted. In the pages that follow, comments are summarized and listed with MDE's response.

Author	Affiliation	Date	Comment Number
Todd Miller	Canaan Valley Institute	August 11, 2006	1

Comments and Responses:

1. The commentor states that the model used in the TMDL does not account for stream bank or channel erosion, which can be major sources of sediment. The commentor continues by stating that there are several methods available for modeling stream bank erosion, which include Penn State's General Watershed Loading function and EPA's Watershed Assessment of River Stability and Sediment Supply (WARSSS)

   Response: Maryland Department of the Environment (MDE) is aware of Penn State's General Watershed Loading Function model and the lateral erosion rate equation that is currently used to estimate stream bank erosion. MDE is also familiar with the EPA's Watershed Assessment of River Stability and Sediment Supply (WARSSS) model and the current research on the Suspended and Bedded Sediment (SABS) water quality criteria guidance. The latter provides several alternative techniques to developing sediment criteria. MDE has reviewed several of these techniques and decided on the approach outlined in the MDE sediment TMDL methodology report. This approach directly links the watershed sediment load to the accepted endpoint of biotic integrity of an aquatic community.

   In the development of the Maryland sediment TMDLs, MDE applied the US EPA Chesapeake Bay Program Phase V (CBP P5) watershed modeling tools. MDE chose this approach for the following reasons: (1) the geographic coverage of the model, (2) the consistency of model input information, and (3) the consistency with future analyses of downstream conditions (*i.e.*, Chesapeake Bay water clarity).

   The CBP P5 watershed model is based on the edge of stream loading estimates, which result from land use specific edge of field targets and land use specific

sediment delivery ratios. Within the next year, the CBP P5 watershed model reach segments (*i.e.,* streams) will be calibrated to observed flow and sediment information. The reach calibration accounts for scour and deposition in larger stream systems and may provide some more insight into the channel sources. However, based on current research, it is still very difficult to determine the contribution of stream bank erosion and legacy sediments to the total watershed sediment load. The CBP P5 reach calibration will only affect the instream processes; thus the current sediment TMDL, which is based on the edge of stream loads, will remain the same.

The CBP P5 watershed model is a lumped model, where land use specific sediment delivery ratios (ton/ac/year) are based on literature information. The model is defined as lumped because many physical processes are combined into a single value and/or factor. While, this model does not explicitly capture the processes of stream bank or bed erosion, the effects of these processes are implicitly included in the underlying assumptions.

For example, in urban or developed land use areas, the sediment yield is estimated from the percentage of impervious area, where the yield increases with increasing imperviousness. Because the terrestrial sediment source decreases with a growing impervious area, it is assumed that the additional sediment yield is driven by increased flow, which results in channel erosion. In non-urban land uses, erosion from the landscape is considered to be the primary sediment source; however, it is widely recognized that not all eroded sediment is transported to the stream system. This depositional effect is captured using a sediment delivery ratio, which is the proportion of the terrestrial erosion that reaches the stream system.

It would be expected that during the implementation planning process additional site level information (e.g. bank stability, erosion extent, etc.) would be used to determine the appropriate type of best management practices. This information would determine whether upland or in-stream practices would best reduce the sediment loads and subsequently impact the stream's aquatic health.