Challenge to the Water Clarity Workshop Participants:

Can We Provide Science-Based Answers to the Following Set of Managers' Questions?

Objective: Provide clear explanations of the observed decades of watershed loads and resultant Bay water clarity patterns which, in turn, will contribute to the base of information to be used in making decisions on needed adjustments in expectations and responsibilities for reducing the remaining nutrient and sediment loads from specific source sectors and areas in the watershed by the agreed to 2025 end date.

From the Original STAC Workshop Proposal: "Recent observations and analyses have indicated that water clarity has remained low or has continued to decline across much of the Bay's tidal habitats. This resilience of low water clarity, despite stable or declining nutrient and sediment loads from at least some regions of the Bay's watershed, highlights the many complex biological and physical processes that influence water clarity in estuaries.

Water clarity is a key management target given the limits it imposes on SAV growth and distribution. In the record of the distribution and abundance of Chesapeake Bay submerged aquatic vegetation, dating back to the 1970s, we have witnessed periodic rises and falls in the acreages of these underwater grasses, but we can only explain some of the reasons behind these trends. An expanded understanding of the controls on water clarity variability will help elucidate these SAV trends, while providing new insights into the interactions between eutrophication, sediment load, and sediment transport.

This workshop will bring together the multiple disciplines needed to de-construct what has been happening across the watershed's landscape over the past decades and how those actions and changes have influenced the movement of sediment and suspended materials through the watershed and into the tidal waters."

Questions Being Asked by Managers: Why we have been witnessing no trends or declining trends in water clarify over the past three decades of widespread best management practice implementation on agricultural lands and urban and suburban landscapes?

Should we be taking a different path towards reducing the real "sources" contributing to these declining water clarity conditions?

Questions to be Addressed During the First and Second Workshops:

- Do we understand enough about sediment delivery processes over land and flood plains, and within stream banks and systems, to tell the upland-to-within-stream loads story over the past three decades for the different basins of the Chesapeake Bay watershed?

- Can we make quantitative connections between observed trends in the loads of suspended sediments from the watershed's rivers and adjacent lands and tidal shorelines and the long term trends in water clarity in the tidal waters?

- What are the relative influences on observed water clarity from suspended sediment, suspended organic materials, and algal biomass within the water column?

- Have those relative influences changed with any discernable pattern over the past three decades?

- Can we tell a more quantifiable and understandable story about the interactions between eutrophication processes and processes influencing the increased 'suspendibility' of sediment particles within the water column?

- Can we forge strong, quantitative relationships between long term SAV distribution and abundance trends and observed trends in water quality clarity over the past decades at local, regional and/or baywide scales?

- Based on answers to the above questions, what are the prospects for seeing improving trends in water clarity with continued efforts directed towards reducing nutrient and sediment loads from their established sources?

- Are we ready to provide strong science-based advice to Bay and watershed managers on how much more or less emphasis should be placed on making further reductions in land-based, flood-plain based, and stream corridor based sediment load reductions into the future?

- Are we ready to tell Bay and watershed managers that they need to re-think the relationships between sediment loads, nutrient loads, and water clarity?

- If so, what are the relationships that those managers should be basing their upcoming decision making on?