Concept for the
Development of a Chesapeake Bay Technology Assessment Protocol (CBTAP)

- There is a tremendous opportunity for manufactured stormwater treatment devices (MTDs) to serve an important function in providing cost effective treatment options for urbanized areas.
- The history of some poorly-performing MTDs currently in operation and the use of arbitrary or assumed performance credits have created an atmosphere of great uncertainty about the devices and has resulted in the decision by the Chesapeake Bay Program not to accept MTDs for modeling urban stormwater TMDL attainment.
- As the MTD's are not incorporated into the modeling framework, the hundreds of facilities being installed within the watershed are currently not being captured in TMDL Action Plans or State Milestones and local governments cannot claim nutrient/sediment credits.
- A challenge exists in balancing the need to monitor and verify nutrient removal performance of manufactured treatment devices (MTDs) and the need to establish a reasonable process that continues to encourage innovation and MTD product development.
- There is a clear need for a rigorous, consistent, and scientifically defensible process that is transparent and affords manufacturers a clear path towards approval.

Due in part to the Chesapeake Bay TMDL, many Mid-Atlantic States have revised their stormwater programs significantly over the last several years. In most cases, stormwater treatment through specific water quality BMPs is requisite in order to meet required nutrient/sediment constituent removals. Treatment needs are usually met from a set of nonproprietary or traditional BMPs, for which expected performance, while variable, has been established based upon research, including field deployment and monitoring. Alternatively, manufactured treatment devices are structural BMPs that are typically proposed for ultra-urban or other high density developments. In many cases, it is not practical to implement many of the land based nonproprietary BMPs where cost effective treatment may only achieved through a reduced footprint (and generally a more expensive) proprietary BMP.

<u>Existing Testing Protocols</u>

At the national level, the EPA's Environmental Testing and Verification program (ETV) was set up to evaluate and verify products and practices across the country. This program was first

established in 1995 and was administered by the EPA's Office of Research. The goal was to "provide credible performance data for commercial-ready environmental technologies to speed their implementation for the benefit of purchasers, permitters, vendors and the public". The program stopped taking applications for technology verifications in 2013 and has since been discontinued.

The two most widely cited testing procedures for MTDs are the Technology Acceptance Protocol-Ecology (TAPE) administered by the Washington Stormwater Center and the Technology Acceptance and Reciprocity Partnership (TARP) which was originally formed by the states of California, Illinois, Maryland, Massachusetts, New Jersey, New York, Pennsylvania, and Virginia to provide a uniform method for demonstrating the effectiveness of stormwater technologies and developing test quality assurance plans for certification or verification of performance claims. This partnership has since dissolved and the individual states have developed some variations to the original protocol.

In general, for the Chesapeake Bay Watershed, the concerns with these two protocols are that TARP only provides for testing of sediment removal and while one of the protocols for TAPE provides for evaluation of total phosphorus treatment, the Washington state climatic conditions (gentle rainfall) are unlike Virginia conditions (heavier, more intense rainfall). Most of the Chesapeake Bay watershed localities target the 90th percentile rainfall depth for system sizing and volume capture; and monitoring data quality objectives should take into account the shorter duration and higher intensity storms of the mid-Atlantic.

Potentially even more important than the performance data, the expected operational life of the MTD will be influenced by the higher loads associated with the higher intensity. Likewise, there could be questions regarding the transferability of a TP performance credit based on the presence of dissimilar gradations of TSS and therefore particulate phosphorus (volcanic geology versus the aged fractured rock geology of the mid-Atlantic). The TAPE protocol also lacks an evaluation of dissolved phosphorus constituents which is extremely important because it is the dissolved fraction that it's most difficult to treat.

Most Commonly Cited Protocols:

Program Name	Coverage	Jurisdiction or Entity of Origin	Reciprocity Granted by Other States	Program Status
EPA Environmental Technology Verification (ETV) Program	U.S./National	EPA, NSF International	Yes	Discontinued
Technology Acceptance Reciprocity Partnership (TARP) Program	Multi-state	Endorsed or recognized by CA, MA, MD, NJ, PA, VA, and NY	Yes	Partnership has dissolved, but protocol still used by many states

Technology Assessment Protocol – Ecology (TAPE) Program	State	Washington State	Yes	Active
New Jersey Corporation for Advanced Technology (NJCAT)	State	New Jersey	Yes	Active
CALTRANS	State	California	No	Active
Georgia Technology Acceptance Protocol (GTAP)	State	Georgia	No	Active
NC Preliminary Evaluation Program (NCPEP)	State	North Carolina	No	Active
Virginia Technology Acceptance Protocol (VTAP)	State	Virginia	No	Withdrawn
Massachusetts Stormwater Technology Evaluation Project (MASTEP)	State	Massachusetts	No	Active

While not easy, verifying the performance of stormwater MTDs with their unique geometry and packaging of water quality treatment processes should be relatively simple, as compared to some of the more complex land based BMPs being implemented in the Chesapeake Bay watershed. However, it is the innovation and the uniqueness of that geometry which makes this process complicated. Clearly, the private companies that have invested hundreds of thousands of dollars into research and design are hopeful that the Chesapeake Bay Program and its partnership can reach a consensus.

Panel Approach

It is anticipated that the initial approach of the Panel will be to start the development of CBTAP utilizing the framework of the recently withdrawn Virginia Technology Acceptance Protocol (VTAP). The previously described limitations and concerns in regard to existing protocols lead to Virginia's effort to develop the VTAP as a means of addressing MTDs within the Commonwealth. Unfortunately, this protocol was recently withdrawn by the Virginia Department of Environmental Quality (DEQ) after a 5-year consensus development effort due to variety of policy differences/concerns between the two Virginia agencies. While the existing protocol will need to be refined, and certainly to accommodate the Bay Watershed as a whole, the framework should serve as an excellent starting point. The final CBTAP will result in a self-funded manufactures testing protocol which will produce nitrogen/phosphorus/sediment removal efficiencies which can then be incorporated into the Chesapeake Bay modeling framework with a degree of confidence. Successful completion of the testing protocol will also enable the manufacture to market the device throughout the watershed and be able to claim an associated load reduction that a developer/local government can then claim credit for in a TMDL Action Plan.

Resource Needs

While the panel operations will draw heavily upon the Urban Workgroup's Coordinator and CRC Staffer, it is anticipated that additional resources from the CBP will be necessary to complete the work effort.

Proposed Panel Schedule

Kickoff teleconference meeting to be scheduled for August/September of 2014 to initially discuss the panel approach to the technical issues and to plan a STAC research review workshop for later in the Fall/Winter time frame. The STAC proposal has been submitted by STAC member Dr. David Sample, Virginia Tech.

Continued teleconferences and/or face to face meetings until a consensus is reached with a goal of having a report available for the Urban Stormwater Workgroup by September of 2015 to be followed by approval by the Water Quality Goal Implementation Team (WQGIT).

Panel Participants

The panel will consist of twelve to fifteen invited members representing the Bay Partnership, urban stormwater engineering consultants, academia and the MTD industry. Given the importance of the MTD industry representatives it will be understood that the potential for a conflict of interest exists. All Panelists will be required to identify any potential financial or other conflicts of interest prior to serving on the Panel.