Summary of Partnership Comments and Panel Responses to Draft Report of Recommendations from the Best Management Practice (BMP) Expert Panel for Urban Tree Canopy

The Urban Tree Canopy (UTC) panel's report was first released for review and comment by the Chesapeake Bay Program (CBP) partnership on May 3, 2016. This document is provided in accordance with the BMP Protocol, which instructs the Panel Chair and Panel Coordinator to develop a "response to comments" document that provides a response to comments received.

Comments were submitted to the Panel Coordinator from nine individuals or entities between May 3 and June 9. These comments ranged from one or two sentences, to multiple pages of written comments. Comments or suggested edits that pertain to grammar, spelling or formatting of the report are not included or addressed here, but the Coordinator has noted those comments for direct revisions to the report.

This document summarizes major or recurring comments of interest to the partnership and is divided by topic, which are categorized as follows:

I. Proposal by MDE and MD DNR recommending a second type of tree planting BMP credit
II. Tracking and Report BMP credit
III. Modeling
IV. Land Use Loading Rate
V. Future Research and Management Needs

A separate table is provided with a complete list of comments submitted through June 9 along with responses from the Panel Chair and Coordinator.

The order of comments or responses in this document is neither a reflection of their importance or impact in any way, nor is their order necessarily chronological. They are arranged in a way that is intended to be more convenient to the reader, i.e. according to their relation or overlap to one another or their general frequency in received comments. Additional comments received following the June 9th comment deadline will be appended to the third section of this document as needed.

I. Proposal by MDE and MD DNR recommending a second type of tree planting BMP credit

General issue: During the May 20 webinar and the 30-day comment period some partners expressed concern that the recommended Phase 6 urban tree planting credit does not adequately address reforestation-focused programs in developed areas where there is an unmanaged understory (i.e., not turfgrass, not fertilized).

MDE and MD DNR coordinated their response to comments and submitted a proposal that was supported and updated by the Forestry Workgroup (FWG). Additional input provided by

Arlington (VA) Department of Parks and Recreation, and Baltimore County suggest support of a credit recognizing the benefits of forest-like plantings where the understory is not impervious surface or managed turfgrass, or programs that have measures to ensure the trees' survival. An example was provided where local tree planting programs specify survivability rates of 90% or 100% depending on the type of planting. The proposal is attached as an appendix to this document.

Raised by: MDE, MD DNR, Arlington VA Parks and Rec, Baltimore County. See attached table for specific comments and responses.

General Response to the Proposal: The Chair of the Expert Panel convened conference calls with the Expert Panel members June 17 and 20 to receive their input and recommendations on the proposal. The panel was asked if they supported the proposal "as-is", "with modifications," or "did not support the proposal". There was not consensus amongst the Expert Panel members, however the majority did not support the proposal. One expert panel supported the proposal "as-is"; one expert panel member was amenable to support the proposal from a programmatic but not technical perspective, while four panel members did not support the proposal even with modifications. Three panel members were not available for comments (no response from two; one is on sabbatical).

Overall, with the exception of one panel member, the Expert Panel found that assigning new reforestation projects of ¼ acre or greater the same pollutant loading rate as that of a mature forest was not supported by the literature nor by any technical documentation at this time. A summary of the panel's input is provided below.

<u>Viewpoint of panelist in support of the proposal</u>
The proposal provides additional incentive to existing tree planting programs that strive to re-create forest-like conditions. The eligibility requirements are consistent with existing programs, such as the MD Forest Conservation Act and local ordinances. It is believed that the impact of this additional incentive would address a small area within the Bay watershed, while the potential to make programmatic gains is far greater. The eligibility requirements differentiate the proposed '2nd-tier' credit relative to the CBWM 5.3.2 tree planting credit that provides a land use conversion credit to forested land use given the qualifying conditions (i.e., contiguous planting areas and other eligibility requirements, such as a planting plan). Further, there is no acreage threshold for tree planted as defined for forest land use.

The expert panel member also commented that a land use conversion to a "'<u>mixed open</u>" land use may be a reasonable alternative to forest. "Mixed open" provides a land use loading rate higher than Tree Canopy over Turfgrass, but lower than forests. It was thought that early successional reforestation efforts throughout the watershed tend to come out classed as shrub-scrub, which is a component of the Mixed Open land use in Phase 6.

<u>Viewpoint of panelists not in support of the proposal</u>
The major concern noted by the Expert Panel rejecting the proposal was the lack of technical basis and rational for the '2nd-tier' credit and awarding a much greater water quality benefit than recommended in the report (one tree planted receives a 144 square feet of canopy coverage, or 300 trees converts one acre to tree canopy applied to the relative tree canopy land use

loading rates). While there is potential support to credit this type of planting from a couple of panel members, they did not support conversion to the forest land use as a basis for credit. The proposal is seen as 'status quo' to the Phase 5.3.2 urban tree planting credit, and as discussed in the report, the conversion to forest land use over-credits planting projects as a result. Panel members acknowledged there were a variety of planting projects, from street trees to contiguous planting areas, however, and that the water quality science is insufficient to confidently distinguish their benefits in urban or developed areas. The land use loading rates derived applies the best available science to derive the water quality benefit for trees planted.

Further, it was stated that the loading rates were assigned to the land cover and the BMP was created to provide implementation credit due to the long interval between land cover imagery assessments now that tree canopy land uses exist in the modeling tools. Creating 1-acre minimum for a forest in the land cover and 0.25 acre minimum in the BMP inappropriately decouples the BMP from the land cover and unnecessarily complicates and introduces inconsistencies of what is forest and what is tree planting. There was no technical basis provided in the proposed Urban Forest Planting proposal for 0.25 acre as the threshold to provide greater water quality benefit. A review of the i-Tree Forecast results suggest that on average, broadleaf-medium and broadleaf large trees at 15 years (the BMP duration for the proposal), will have a projected crown diameter of 20-ft, or 314 sq ft in area. This is equivalent to ~32 trees per 0.25 acre, assuming no mortality or 100% replacement.

Proposed path forward: The Expert Panel discussed a number of possible options to address the proposal for a 2nd-tier credit that would be more in-line with the methods and rationale recommended by the Panel.

1. An option would be to simulate the 2nd-tier BMP as a land-use change to another Phase 6 land use with a greater loading rate than forest, but a lower loading rate than tree canopy over turfgrass. Mixed Open appears to be the most reasonable land use that could be applied for this option, but as noted above, there would need to be more documented technical justification for applying the selected Phase 6 land use than is provided in the current FWG proposal. A more detailed justification of the 0.25 acre or other selected threshold for contiguous planting area would also need to be provided.

A second and third option were also suggested by the Expert Panel, however, there are issues moving forward with them that would preclude adoption of the Expert Panel Recommendation in the proposed timeframe.

2. The model to derive the relative land use load rate for "tree canopy over pervious" used a runoff coefficient representative of turfgrass with an assumed impact from trees potential to increase infiltration (CN= 0.74). As such, modeling the water quality benefit could be done by modifying assumptions of the underlying land cover. However, this would essentially create a new loading rate and is not a feasible option at this time considering that land uses and loading rates have already been established for Phase 6. This is a recommendation for a future expert panel, or a time when the land use loading rates for tree canopy are revisited.
3. A recommendation may be added for jurisdictions to use i-Tree Forecast in some form to run specific tree planting scenarios that may provide a higher canopy area credit. The

land use loading rate would remain the same, but a potentially larger area would be converted for qualifying projects. However, this would not address differences in the understory and would require time and resources to perform simulations through Forecast. This is a recommendations for a future expert panel, or a time when the urban tree canopy (tree planting) BMP is revisited.

The Phase 6 definition for Mixed Open and preliminary draft loading rates from the second beta Phase 6 Watershed Model are provided below for discussion purposes. The loading rates in the table are subject to change as they are preliminary results from a beta calibration and will change in future calibrations, but there is no anticipated change in the relative differences among the land uses (i.e. their export ratios which are provided in parentheses).

Mixed Open (MO) – All scrub-shrub and herbaceous and barren lands that have been minimally disturbed (e.g., periodically bush hogged, meadows, etc.), reclaimed, or that have internal and/or regulated drainage. These include active, abandoned and reclaimed mines, landfills, beaches, waterbody margins, natural grasslands, utility right-of-ways and a portion of herbaceous lands within industrial, transitional (early stages of construction), and warehousing land uses. Also included are potential agricultural lands that were not mapped as either cropland or pasture in the NASS Cropland Data Layers (2008 through 2015).

Table 1. Summary of draft preliminary Phase 6 TN and TP export rates. Source: Draft Phase 6 (second beta) Watershed Model documentation, Section 2. **Draft, for discussion purposes only.** April 19, 2016.

Phase 6 land use	**Average TN export rate** lbs/ac-year (export rate ratio)	**Average TP export rate** lbs/ac-year (export rate ratio)
Mixed Open (Natural)	4.52 (1.46)	0.82 (5.69)
True Forest (Natural)	3.1 (1.0)	0.14 (1.0)
Tree Canopy over Turfgrass (Developed)	16.79 (0.38)	1.32 (0.79)
Tree Canopy over Impervious (Developed)	40.36 (0.91)	1.51 (0.91)

II. Tracking and Report BMP credit

General issue: The tracking and reporting of the BMP and the tree canopy land uses was not sufficiently clear in the report. Concerns were identified about the how the BMP would be reported in time periods between the mapping assessments to update the land use, or how the

BMP would be reported following a land use update. There was concern that credit would require specific planting density (300 trees/acre) or some species would be eligible for credit.

Raised by: M. Honeczy (MD DNR), Arlington VA Dept Env Services, Baltimore County, MDE and MD DNR. See attached table for specific comments and responses.

General Response: The Urban Tree Planting BMP for Phase 6 will receive credit between updates to satellite imagery-based land use data. Following an imagery update all historic implementation effort will still be tracked toward milestones set by the jurisdictions and all new implementation will be counted as a land use change. This avoids double-counting in the model simulations while demonstrating implementation and effort toward milestone goals. A single credit is provided that is applicable to all trees planted and does not differentiate between species nor type of planting scenario. The Expert Panel recommendations considered the criteria used to map and classify tree canopy land uses developed the CBP Partnership to address the double-counting issue that was part of the Panel scope.

Next steps: Edits will be made to the final report for added clarification to specify the annual reporting and tracking for BMP credit, to include specific NEIEN issues that are the purview of the WTWG and can be clarified in Appendix F.

III. Modeling

General Issue: Comments were raised to ensure there was consistency with the definitions for the Phase 6 land uses mentioned in the report, the creditable area for tree planting BMPs versus the land use, and in general, how land use change BMPs are credited in the model (i.e., full growth).

Raised by: M. Honeczy (MD DNR), Arlington VA Dept Env Services, Baltimore County, MDE and DNR. See attached table for specific comments and responses.

General Response: The definitions provided in the final report were up-to-date at the time the draft report was released. Revisions to the definitions will be made to the final report as needed, though it should be emphasized that specific mapping definitions or procedures are not the purview of the Expert Panel and are included for the reader's benefit, not as recommendations. As described in the report and considering the range of conditions that exist in urban and suburban areas, the panel credited Urban Tree Planting based on 10-years of growth is reasonable. The only factor determined based on this 10 years of projected growth is the estimated average area of canopy per tree planted. This allows conversion from number of trees planted into acres for the Watershed Model and annual BMP credit. Other land use change BMPs like forest buffers or wetland restoration are already reported in terms of area (e.g., acres). The nutrient and sediment reduction is applied in full when the BMP is credited, i.e. the relative land use loading rate is applied immediately in the model. There is no inconsistency in the approach compared to other land use change BMPs it is just an extra step that other land use change BMPs do not need.

Next steps: Clarifying edits will be made to ensure that the definitions are current and that the identified aspects of the panel's recommendations are more clearly stated. If commenters have specific edits in mind they are encouraged to offer specific edits to the Chair and Coordinator.

IV. Land Use Loading Rate

General issue: Comments received noted issues with methods to derive the land use loading rates for the tree canopy land uses. The Expert Panel adopted these loading rates as the water quality benefit (credit) for the urban tree planting BMP.

Raised by: VA DEQ, Ken Belt. See attached table for specific comments and responses.

General response: The land use loading rates for Tree Canopy over Impervious and Tree Canopy over Pervious/Turf Grass were reviewed by the Urban Stormwater Workgroup, Modeling Workgroup and Water Quality Goal Implementation Team. None of the groups identified fatal flaws with the proposed loading rates or methods. Following the USWG approval (3/8/16) the WQGIT approved the loading rates on 3/14/16 and the loading rates were incorporated in the second beta version of the Phase 6 Watershed Model.

Next steps: The tree canopy loading rates are not subject to further partnership review unless the commenter feels that this issue represents a fatal flaw and is able to document the fatal flaw with supporting data and references for consideration by the partnership. Pending any further documentation to identify fatal flaws, no edits are planned.

V. Future Research and Management Needs

General Issue: A few comments identified additional research and management needs as it pertains to quantifying the water quality benefits of urban tree planting and cost-benefit analysis of the practice.

Raised by: M. Honeczy (MD DNR), Arlington (VA) Parks and Rec

General Response and next steps: The final report will be revised to reflect these additional recommendations.

VI. Summary of All Comments and Responses

The attached table includes responses for all comments that were received.