RESPONSE TO COMMENTS (shown in blue)

Note page number references are for Version 2

1) Recommended Improvements to the CBWM Model: PA commends the Panel for recommending improvements to the Model as well as prioritizing research to further study the issues related to UNM. It seems obvious that both are needed to better understand the issue and more effectively manage UNM in the Bay Watershed, and to determine if UNM is worth tracking. *See page 5*

Thanks

2) Urban Pervious Land vs. Turf Cover: Please clarify if "Urban Pervious Land" as represented in Table 3 is the same as "Turf Cover" as represented in Figure 1, as far as what is considered for input into the CBWM. *See pages 6 & 13*

Yes, the title of Figure 1 should read urban pervious land. The data in both the Figure and the Table are from Peter Clagget's most recent estimates of urban pervious land in the Bay watershed, and are the same data as used in the CBWM.

3) Statewide Phosphorous Reduction Credit for Pervious Land: The Panel's recommendation is that state credit will be adjusted upward or downward based on state-reported trends in the P content of non-farm fertilizer sales data. Please attach or include the report the source(s) for this information. *See page 8*

The specific method is provided in Section 6.1 of the report. Each states compiles its fertilizer statistics in a different way, so it may be necessary to assemble a work group composed of each Bay state's agricultural statistics in the future to develop a standard method for reporting. Note the new language in blue in last paragraph of Section 6.1 ,

4) Trained UNM Experts: Qualifying condition in Section 2, although being beneficial; establishes conditions and criteria that go beyond a voluntary approach. Voluntary/mandatory programs with this respect have not been established in PA. *See page 11*

The language was crafted to let each Bay state designate who is qualified to prepare UNM plans, regardless of whether a state has mandatory or voluntary approach to UNM. Each state has different agencies who do plans (cooperative extension, soil and water conservation districts, turf science, local governments). Not exactly sure how it works in PA, but DEP has the option to designate who is qualified and who is not.

5) Homeowner UNM Pledge: The report suggests that only partial credit would be given for a homeowner that submits a written pledge. It does not address how a homeowner who commits to applying no fertilizer on their lawn will be addressed. It seems to require excessive levels of documentation and commitments on behalf of each landowner. From a modeling perspective, it

would be more practical to properly characterize land use assumptions instead of relying on documentation on a micro-scale of the typically expected use. *See page 11*

The panel was clear that a UNM pledge could be granted credit regardless of whether a lawn is fertilized or not, as long as they meet the core UNM practices that apply to the property. The credit is reduced due to panel concerns about verification, and the fact that most homeowners will not have the expertise to assess their risk of nutrient export. As written, each State has the authority to decide whether it will allow UNM pledge or a more detailed UNM plan.

6) *P Law:* Legislation has not passed in PA regarding phosphorous control. Therefore any intended benefit as suggested in the Panel Recommendations would have to be realized by the fact that manufacturers would likely be distributing the same product to PA as they would be to nearby states that have passed P laws, or certain distributors (and manufacturers) would be voluntarily providing a different product. *See page 14*

States that have not passed P fertilizer laws still get some credit due to the industry phase out, but only for three years. After that, they will need to document actual reductions in non-farm P fertilizer applications in the state to get credit. It may turn out that a state that had not passed a law could earn higher credits in this stage, if the industry phase out continues. There are some benefits to passage of PA fertilizer law. (see the proposed credit for N fertilizer legislation (p. 11)

7) Industry Reported Reduction in P Sales: Table 6 indicates an 82% reduction of P in fertilizer sales in PA from 2006 to 2010. PA supports the recommendation by the majority of the panel members to provide credit for these reductions in CBWM. *See page 17*

the Panel notes that the industry data provided by Scott's Miracle Gro cited in Table 6 represents only 60% of the market, so it was conservative on how much automatic credit would be granted during the first three years. More accurate tracking on non-farm fertilizer statistics should provide better state estimates to include in future.

8) CBP-Approved Rate for UNM: If the CBP-approved rates UNM reduce N loads by 17% and P by 22% is not substantiated, how has this affected the CPBWM to the present date? *See page 18.*

The practical implication of the lower UNM rates developed by the panel is that states that had relied heavily on UNM for nutrient reduction in their Phase 2 WIPs would get less credit than they planned. In addition, the N and P reductions for UNM that are currently credited in CBWM progress runs in each Bay state would also decline somewhat. The amount of decline depends on how many acres of UNM each sate is currently submitting in progress runs

9) Defining Fertilizer Inputs: PA has not yet determined if the methods outlined are consistent with PA land use conditions. At this time, we reserve comment regarding how fertilizer inputs will be addressed in the CBWM. *See page 19*

No response

10) Atmospheric Deposition of N: Inputs of atmospheric deposition are not addressed in the WIP. Even though atmospheric deposition may be an input into the overall N load generated from a particular lawn, this portion of the load should not be considered in the portion that is attempted to be captured. PA recommends that this source be addressed as the urban sector on the CBWM. *See page 20*

The panel respectfully disagrees.

11) Trends in Non-Farm Fertilizer Sales in the Bay Watershed: It appears that data sources for N and especially P in fertilizer are lacking and the Panel recognizes this issue in the discussion. This issue should also be considered because the data is necessary for some of the BMP data in the CBWM. *See page 20*

See response to Comment 3

Defining Fertilizer Inputs: PA recommends that the panel clarify whether the weighted average is correct and based upon sales data or other sources to establish the urban load. Also, further explanation of what cross-checking the panel did to establish that the fertilizer application rates are an appropriate aggregate of inputs into the model. This issue may be significant because we know that not all urban lands are fertilized, which leads to a possibility that phantom loads may be established in the model by overly-conservative assumptions. *See pages 20 & 24*

The panel checked the CBWM weighted average, and the technical assumptions they used on percent of pervious acres that were fertilized/not-fertilized, the total acres of pervious land, and adjusted state fertilizer sales data, and found that they were consistent with the available science. The panel also notes that the nutrient load from pervious land is derived from many different sources beyond fertilizer input, (organic matter, atmospheric deposition etc). The panel also recommends that future refinements of the CBWM have multiple pervious land categories, so that aggregation is no longer needed (p. 54)

12) N and P Removal Efficiency for UNM Plans: It is noted that the Panel used a conservative approach to define nutrient load reductions. We are concerned that the conservative assumptions, based on already conservative assumptions for inputs in to the CBWM may culminate in unrealistic conclusions. *See pages 20 & 42*

The panel is comfortable with its recommendations on UNM rates, and has done a sector cross walk with the Ag Workgroup to ensure consistency with the rates used for agricultural nutrient management

13) Source of Nitrogen: Section 4.2 makes the case that nitrogen loading from urban areas is a very insignificant source of nitrogen to the Chesapeake Bay. There do not appear to be any conclusions based in this. *See pages 22 through 25*

The panel does not concur that N loading from urban areas is a very insignificant source of nitrogen to the Chesapeake Bay. The loads from both pervious and impervious urban land are indeed significant. The key point of Section 4.2 is that there are several pathways whereby N can be

exported from pervious land, and that under low risk lawn condition, most of the fertilizer inputs are retained.

14) *Effectiveness of outreach:* The Nielson and Smith (2005) study suggests that there is a generally low interest on behalf of homeowners to participate in UNM behavior changes to reduce nutrient loads. Assumptions in this study, as well as others in the Panel Recommendations do not seem to be accurate throughout the urbanized areas in Pennsylvania, which have a small percentage of the overall portion of lawns in the Chesapeake Bay Watershed. These assumptions seem to be too broad as characterized by the studies are represented in this section. *See page 35*

The panel based its conclusions on the available science and studies on the effect of outreach on behavior change. The panel acknowledges that there were no studies on effect of outreach on homeowner behavior that were conducted in PA, At the same time, we are not sure what scientific basis is for claiming that PA lawns would be different