Appendix F
Technical Requirements for Entering the UNM Practice into Scenario Builder

Approved by WTWG: September 13, 2013

Background. The Water Quality Goal Implementation Team (WQGIT) agreed in June 2013 that each expert BMP panel should work with CBP staff and the Watershed Technical Work Group (WTWG) to develop a technical appendix for each final report that is completed that spells out the specific requirements for entering the practice for credit into Scenario Builder. Since the UNM expert panel report was approved prior to June 2013, this Appendix was prepared to comply with this new requirement. Please note that the Appendix references the specific sections in the approved final report where these issues were dealt with.

Part A
The Basic Credit for Urban Nutrient Management Plans.

Q-1: What are the efficiency reductions a jurisdiction can claim for qualifying acres subject to urban nutrient management (UNM) plans?

A-1: Table 1 below lists the nutrient reductions that are available for qualified UNM plans, as defined by the expert panel (Table, p. 5 and Section 5.3, pp. 42-44).

Table 1. Efficiency Reductions for Qualifying Urban Nutrient Management Acres in NY, PA, DE, DC, WV and VA

Risk Type	Percent TN Reduced per Acre	Percent TP Reduced per Acre
High	20	10
Low	6	3
Blended	9	4.5

Q-2: How is the UNM load reduction actually calculated in Scenario Builder?

A-2. The total load reduction is determined in the CBWM as the product of the efficiency reduction rate in Table 1, the total acres of pervious land in the river basin segment subject to UNM plans, and the unit N and P load simulated for the river basin segment in which the plans occur. Consequently, the total load reduction is taken as a simple edge of stream BMP load reduction factor at the river basin segment level.

If a state reports more than one risk type, the reduction is calculated in the same manner, except that a separate calculation for the acreage of pervious land is associated with each risk type.

Q-3: How are high, low, or blended risk types defined for pervious lands?

A-3: The panel defined high risk lawns as those acres exhibiting one or more of the following (Section 4.3):

- Over-fertilizing beyond state or extension recommendations
- P-saturated soils as determined by a soil analysis
- Newly established turf
- Slopes of more than 15%
- Exposed soil (more than 5% for managed turf and 15% for unmanaged turf)
- High water table (within 3 feet of the surface)
- Over-irrigated lawns
- Soils that are shallow, compacted or have low water holding capacity
- High use areas (e.g., athletic fields, golf courses)
- Sandy soils (infiltration rate more than 2 inches per hour)
- Adjacent to stream, river or Bay (within 300 feet)
- Karst terrain

Low risk lawns are those acres that do not exhibit any of these risk factors. If a state cannot distinguish between high and low risk factors, they can simply claim the blended rate for all the UNM acreage of pervious land (Section 5.3).

If risk status was not known it was assumed by the panel that a blended efficiency using 80% of the low risk reduction efficiency and 20% high risk reduction efficiency was justified. The Panel anticipated that many states would simply use the blended rates over the next several years, until they are able to accurately track and report the risk status (High/Low) of individual UNM plans. Some jurisdictions may also wish to define additional characteristics of high risk lawns, as shown in the last two paragraphs and table in Section 5.3.

Q4: Can a homeowner pledge be used in lieu of a UNM plan?

A-4: Yes, but only in limited situations. The definition of a homeowner pledge is provided in Section 2 (page 11), and the verification requirements are described in the fourth bullet on page 47. The Panel indicated that homeowner pledges would be much more difficult to verify, and thus homeowner pledges would only be eligible for the low risk efficiency reductions in Table 1. The Panel was clear that it was up to each state's UNM planning agency (see definition in third paragraph of page 11) to decide whether to accept and grant credit for homeowner pledges or not. Jurisdictions will need to document and verify acres under UNM pledges using methods that meet EPA approved QA/QC standards, and will need to describe these methods in their Quality Assurance

Protocol Plan (QAPP). The Virginia Panelist was clear that the VA UNM planning agency would not allow local governments to get credit for homeowner UNM pledges.

Q-5: Why does MD not get any credit for acreage of UNM plans?

A-5: Based on feed-back from MD representatives on the Panel, as well as comments by MD Dept of Agriculture (the state UNM planning agency), Maryland has elected NOT to use written UNM plans or pledges as a major element of its state-wide WIP implementation efforts. Instead, MD has chosen to rely on automatic statewide nutrient reduction credits that are related to its state UNM law and subsequent regulations. These focus on both the "do it yourself" consumer (max N content, max individual application rate, packaging, labeling etc) and regulations on application rates and certification of commercial applicators.

Consequently, the P reductions for MD are based on the P fertilizer credit shown in Part B of this Appendix and the N reductions are computed using the methods shown in Part C. MD can report either way but has elected to report and use the efficiencies as described in section B of this Appendix. It is understood that MD can report acreage either following section A or section B efficiencies of this Appendix as these are mutually exclusive of each other.

The Panel left open the option that MD localities could report UNM plans for un-fertilized lawns (Section 6.3, 2nd paragraph).

Q-6: Why is any nutrient reduction credit given for UNM plans for turf areas that are not fertilized?

A-6: In its review of the science (Section 4.1 and 4.2), the Panel noted that nutrient export from pervious areas was not solely attributable to fertilizer applications. The panel's review of the scientific justification supporting the ten core UNM practices (Section 4.4) documented that six of the ten core UNM practices (1, 2,3, 4, 7 and 10) were not directly related to the application of fertilizers. Therefore, the Panel reasoned that un-fertilized lawns were eligible for UNM credit for both N and P.

Q7: What does a jurisdiction need to report to receive credit for urban nutrient management plans in Scenario Builder?

A7: DC, DE, NY, PA, VA and WV should report the following information:

Risk Type: High; Low; or Blended; if not reported, the default will be Blended
Acres: Number of acres of qualifying urban nutrient management plans or pledges within geographic reporting unit
Location: Approved NEIEN Geographies: Latitude/Longitude; County; County (CBWS Only); Hydrologic Unit Code (HUC12, HUC10, HUC8, HUC6, HUC4), State(CBWSOnly)
Date Plan was Written: Year, assigned date for aggregated data
Lifespan of the plan: In years, if not reported default will be 1 year

Note: Localities may need to provide additional data to the States to document their UNM plans for purposes of verification, and to maintain records of individuals UNM plans. These requirements are outlined in Section 6.2 (p. 47), but do not need to be supplied to CBP directly by the locality.

Q-8: Does a jurisdiction need to report acreage of UNM plans every year to receive credit in the model for existing plans?

A-8: Yes. UNM is expressed as an annual practice. Jurisdictions should report the number of acres in urban nutrient management plans to the Chesapeake Bay Program each year to receive credit in the model.

Q-9: Will historic urban nutrient management plans submitted in previous years receive credit in future years?

A-9: No. Jurisdictions should report the number of acres in urban nutrient management plans to the Chesapeake Bay Program each year to receive credit in the model. It is up to each jurisdiction to ensure that their reporting includes only active and verifiable plans if the plans are written for more than one year. The panel determined that urban nutrient management plans generally are valid from one to three years.

Q-10: What if the Watershed Model does not have enough urban pervious acres to accommodate all the acres of urban nutrient management plans my jurisdiction reports in a county or land-river segment or small watershed?

A-10: If 100% of urban pervious acres are being treated by urban nutrient management plans then the Watershed Model will not give credit for additional acreage covered by plans.

Q-11: Can a jurisdiction report other stormwater BMPs on the same acre covered by an urban nutrient management plan?

A-11: Yes. The urban nutrient management plan will be credited in the Watershed Model along with other urban BMPs on the same acre. This issue is discussed in Section 6.4 of the report. While multiple urban BMPs can be placed on the same acre, the realized edge-of-stream nutrient reductions are adjusted by the Watershed Model to address the diminishing returns that occur when two or more BMPs treat the same acre. Most stormwater BMPs are designed based on the runoff generated from impervious areas in their drainage area, and not the runoff from pervious areas

Part B. The Automatic P Reduction Credit for Adopting UNM Legislation.

Q-12: What nutrient credit will my jurisdiction receive in the Scenario Builder if it has passed urban nutrient management legislation ?

A-12: Starting in 2013, each jurisdiction that has enacted UNM legislation will get a 70% reduction in the current CBWM TP application rate on urban pervious land. Based on prior CBWM model runs, this will equate to an approximate 25% reduction in the unit area load of TP from urban pervious land (see Table, page 5), although the exact reduction will vary by state, as shown in Table 12 (p. 40).   The states of MD, NY and VA all currently have adopted UNM legislation that qualifies for the credit.

If another state enacts UNM legislation in the future, they can request the credit from the USWG. No state reporting is needed to get the credit. This credit will be automatic in CBWM.. The actual edge-of-stream load reduction in any given river-basin segment will differ somewhat due to regional differences in climatic and hydro-geomorphic factors.

Q-13: What if my jurisdiction has <u>NOT</u> passed urban nutrient management legislation ?

A-13: Due to the industry phase-out of phosphorus in lawn fertilizer, states that have not yet enacted legislation will still receive a nutrient reduction credit. It will be modeled as a 60% reduction in the current TP application rate in CBWM for urban pervious land, and will begin in 2013. DC, DE, PA and WV are eligible for this credit. Based on prior CBWM model runs, this will equate to an approximate 20% reduction in the unit area load of TP from urban pervious land (see Table, page 5), although the approximate reduction will vary by state, as shown in Table 13 (p. 40).

Q-14: When will the automatic credit lapse, and jurisdictions will be required to report non-farm nutrient content fertilizer statistics to derive an actual state-wide P application rate for urban pervious areas?

A-14: Starting in 2016, the automatic P credit will lapse, and all jurisdictions will need to report an annual estimate of the actual nutrient content of non-farm fertilizer sales (in pounds) that are applied to pervious lands in their portion of the Chesapeake Bay watershed.

The general procedures for deriving this estimate are outlined in the four steps described in Section 6.1 (p. 45-46). The panel acknowledges the current poor quality of non-farm fertilizer statistics in several states, and recommended that a workgroup be convened before 2016 to determine exactly how to fix the data gaps for reporting non-farm fertilizer sales statistics. This workgroup will work with the CBP's Watershed Technical Workgroup to define describe a process for incorporating non-farm fertilizer sales statistics into the modeling tools.

It should be noted that this shift in P reporting in 2016 will most likely produce greater edge of stream P load reductions than are available under the automatic credit.

Part C.
The N Reduction Credit for MD for UNM Legislation

Maryland is the only Bay state that is currently eligible for an automatic N reduction credit based on the provisions of its law, as defined in on page 9 of the report. The nature of this credit is similar to the automatic P credit, and it is calculated based on the methods described in Sections 5.2 (p. 41) and 5.4 (p. 44) of the report, and is subject to the verification provisions outlined in Section 6.3 (p. 48).

Q-15: What nitrogen reduction credit does MD receive?

A-15: Beginning in 2013, MD will be eligible for an automatic N reduction credit for the acres of pervious land in two management categories, as shown in Table 2.

Table 2. Efficiency Reductions for Qualifying Urban Nutrient Management Acres in MD

Lawn Management Category	Percent TN Reduced per Acre
Commercial Applicator Lawn	9 %
DIY Fertilized Lawn	4.5 %
Unfertilized Lawn	Based on Part A UNM Plan credit, and varies, depending on lawn risk type

Q-16: What information does Maryland need to report to get the credit?

A-16: MD will have to submit its best estimate of the split in acreage of pervious land in three management categories: fertilized by commercial applicators, fertilized by do it yourselfers, and unfertilized (i.e., X%, X% and X%, summing to 100% of MD pervious acres). The estimate will be done on a state-wide basis for all pervious land, either using the MD-specific data in Felton (2007) or the most recent Maryland turf grass survey (the last one I have seen was in 2005, but there may be a more recent one). The estimate would be good for the three years in which the automatic N reduction credit will exist; however, MD may update these percentages if new data becomes available in the interim.

Q-17: How is the automatic N load reduction actually calculated in Scenario Builder?

A-17: The state-wide split in the management categories would be applied uniformly to the acreage of pervious land in each of Maryland's river basin segments. The appropriate percent load reduction rate shown in Table 2 then would be applied to acres fertilized by commercial applicators and DIY's, respectively, as an edge of stream BMP load reduction factor.

Q-18: When will the automatic credit lapse, and jurisdictions will be required to report non-farm nutrient content fertilizer statistics to derive an actual state-wide N application rate for urban pervious areas ?

A-18: Starting in 2016, the automatic N credit will lapse, and all jurisdictions will need to report an annual estimate of the actual nutrient content of non-farm fertilizer sales (in pounds) that are applied to pervious lands in their portion of the Chesapeake Bay watershed.

The general procedures for deriving this estimate is outlined in the four steps described in Section 6.1 (p. 45-46). The panel acknowledges the current poor quality of non-farm fertilizer statistics in several states, and recommended that a work group be convened before 2016 to determine exactly how to fix the data gaps for reporting non-farm fertilizer sales statistics.

Q-19: Can a county also take the UNM plan credit for N and P for pervious land (i.e., Part A) where fertilizers are applied by commercial applicators or do-it-yourselfers ?

A-19: No. The panel considered this to be an instance of double counting (see first sentence Section 6.3, p. 48).

The panel left open the option that MD communities could get the credit for the acreage of land that is not fertilized (see answers to Q-5 and Q-6, respectively.

D. Errata

Page 9: definition of Nitrogen fertilization legislation, bullet b: application rate should read (0.9 lbs/1000 sf) and not (0.9 lbs/acre/year)