Appendix D. Technical Requirements to Entering the Practice in Scenario Builder and the Chesapeake Bay Watershed Model

Background: In accordance with the *Protocol for the Development, Review, and Approval of Loading and Effectiveness Estimates for Nutrient and Sediment Controls in the Chesapeake Bay Watershed Model* (WQGIT, 2015) each BMP expert panel must work with CBPO staff and the Watershed Technical Workgroup (WTWG) to develop a technical appendix for each expert panel report.

The purpose of this technical appendix is to describe how the Expert Panel's recommendations will be integrated into the Chesapeake Bay Program's modeling tools including NEIEN, Scenario Builder and the Watershed Model.

Technical Requirements for Reporting and Crediting the Practice

Q1. How is the BMP defined in the Chesapeake Bay Watershed Model?

A1. Floating treatment wetlands (FTW) are a variant of the BMP enhancement retrofit category. A more specific definition of the practice is provided below.
*Wet Pond: A*n existing stormwater retention pond with a permanent pool of water that has an average depth of 3.5 to 8 feet and meets performance criteria for an effective FTW retrofit application. Wet ponds designed to treat runoff from impervious surfaces associated with the farmstead, covered storage areas and barn rooftops in rural areas are also eligible for the retrofit.
Floating Treatment Wetlands: A proprietary or non-proprietary floating island design that incorporates the following general elements:

- A buoyant artificial raft that floats on the surface
- Constructed from non-toxic materials such as, but not limited to, HDPE plastic, marine grade polystyrene foam and PVC pipe
- Containing growing media planted with aquatic macrophytes whose roots extend well below the water surface.

Q2. What types of qualifying criteria must be met to report the practice for credit in the Phase 6.0 Watershed Model?

A2. The FTW application within an existing pond must:

- Achieve a minimum pond surface coverage of 10% and a maximum cover of no more than 50%
- Have an initial planting density of 2 plugs per square foot and attain a 80% plant coverage on the raft by the end of the growing season
- The raft should be placed perpendicular to the stormwater flow path and be at least 3.5 feet above the bottom of the pond
- Utilize FTW units with a large surface area
- Possess a suitable method for re-aeration to prevent anoxic discharges from the pond during the summer months

- Be adequately anchored or tethered in the pond to protect its flood control function during major storms and enable retrieval for periodic maintenance, yet anchoring should not be too taut to inundate the surface and flooding the raft
- Not be infested with invasive plants and should be initially protected with netting from geese and turtles during plant establishment
- Use native wetland plant species that are appropriate for the ecoregion

Q3. Which land use categories are eligible to receive nutrient and sediment reduction credit the Practice in the Phase 6.0 Watershed Model?

A3. In the Phase 6.0 Watershed Model, nutrient and sediment reduction credits for the practice are applied to all of the urban land uses within the contributing drainage area of the existing wet stormwater pond that meets the qualifying condition. The default land use will be MS4CSSNonregulated.

Q4. How much nitrogen, phosphorus and sediment reduction credit are associated with the practices?

A4. A series of curve are used to define the incremental TSS, TP and TN removal rate associated with the FTW retrofit, based on amount of FTW coverage over the surface area of the existing wet pond, as described in Section 4.3.

Table D.1. Pollutant Removal Rates for FTW Pond Retrofits

		Pollutant		
Practice Name	**Raft Coverage in Pond**	**TN**	**TP**	**TSS**
FTW-1	10%	0.80%	1.60%	2.30%
FTW-2	11-20%	1.70%	3.30%	4.70%
FTW-3	21-30%	2.50%	4.90%	7.00%
FTW-4	31-40%	3.30%	6.50%	9.20%
FTW-5	41-50%	4.10%	8.00%	11.50%

Q5. What do jurisdictions need to report to NEIEN in order to receive credit?

A5. Jurisdictions will need to report the following to NEIEN:

- *BMP Name:* Practice Name (i.e. FTW-1)
- *Measurement Name:* Total Acres Treated (Acres) by the wet pond in which the FTW is located
- *Geographic Unit:* Qualifying NEIEN geographies including: Latitude/Longitude; *or* County; *or* Hydrologic Unit Code (HUC12, HUC10, HUC8, HUC6, HUC4); *or* State
- *Date of Implementation:* Year the practice was installed
- *Land Uses:* Urban. Default Land Use will be MS4CSSNonregulated

Q6. Do I need to report this practice separately from my wet pond BMP?

A6. Yes. If you have a wet pond with a floating treatment wetland, report the FTW practice as described in A5 above, and separately report your wet pond according to the Stormwater Performance Standards Expert Panel report.

Q7. How do I report an FTW practice if it is installed on a previously un-reported wet pond?

A7. If the wet pond was previously unreported, you should report the wet pond to NEIEN using the Stormwater Performance Standards Expert Panel report recommendations with the correct implementation date and an inspection date which may also represent the date the FTW was implemented. You can then report the FTW practice separately as described in A5. This will ensure both BMPs are fully accounted for in NEIEN and the Phase 6 Watershed Model.

Q8. Are the practices cumulative or annual BMPs?

A8. This class of retrofit is a cumulative practice.

Q10. How does the BMP interact with other BMPs located within the same catchment in the CBP modeling tools?

A10. The FTWs are installed within existing wet ponds and otherwise have no interaction with other BMPs.

References:

Chesapeake Bay Program (CBP). 2014. Strengthening verification of best management practices implemented in the Chesapeake Bay watershed: a basin-wide framework. Report and documentation from the Chesapeake Bay Program Water Quality Goal Implementation Team's BMP Verification Committee. Annapolis, MD.

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