Appendix B.
Technical Requirements for Entering Coagulant Enhanced Treatment Retrofits into CAST and the Chesapeake Bay Watershed Model

Presented to the WTWG _____

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, 2022) each new BMP must have a technical appendix developed with CBPO staff and approved by the Watershed Technical Workgroup (WTWG).

The purpose of this technical appendix is to describe how the Urban Stormwater Workgroup's recommendations for crediting Coagulant-Enhanced Treatment systems for stormwater ponds will be integrated into the Chesapeake Bay Program's modeling tools including NEIEN, CAST and the Watershed Model.

Q1. How are coagulant-enhanced treatment (CET) systems defined in the Chesapeake Bay Watershed Model?

A1. CET systems can be added to an existing wet pond or can be constructed as a new BMP and involve adding a common flocculent (aluminum coagulants) to stormwater/surface water which forms precipitates to trap total phosphorus (TP), total nitrogen (TN), and total suspended solids (TSS). CET is a flow-through treatment system with a shorter design residence time than a traditional stormwater pond. The amount of pollutant removal credit is based upon the design rain event depth (See Q3.)

Q2. What are the qualifying criteria for CET systems credit in the Phase 6.0 Watershed Model?

A2. CET systems must meet a significant number of qualifying criteria to ensure proper functioning and protection of downstream resources. The full list of qualifying criteria can be found in Sections 1.1 and 1.2 of the report. Further, coagulants can be used only if allowed by individual state's regulations. If state regulations allow their use, the system must follow all state-specific requirements (e.g., permitting, type of chemical, monitoring), even if these requirements are more stringent than those outlined in this memo. Allowing the use of coagulants for enhanced pollutant removal efficiencies and for MS4 restoration credit is at the discretion of each state. MS4 jurisdictions must contact the state MS4 administrators to discuss individual projects.

Q3. How much nitrogen, phosphorus and sediment reduction credit are associated with the practices?

A3. Pollutant removal credit is based upon the design treatment depth provided by the CET pond system. Rates are based on the Retrofit Adjustor Curves, and modified to

account for additional pollutant removal provided by the coagulant enhancements as described in Section 3.3.

Table B1. Pollutant Removal Efficiencies for Coagulant-Enhanced Treatment Ponds.

Practice Name	Design Rain Event Depth (inches)	TP Removal (%)	TN Removal (%)	TSS Removal (%)
Coagulant Enhanced Treatment Ponds 1	1.0	75	40	79
Coagulant-Enhanced Treatment Ponds 2	1.25	79	42	84
Coagulant-Enhanced Treatment Ponds 3	1.5	81	43	86
Coagulant-Enhanced Treatment Ponds 4	2.0	83	44	88
Coagulant-Enhanced Treatment Ponds 5	2.5	85	45	90

Q4. What do jurisdictions need to report to NEIEN in order to receive reductions for CET practices?

A4. For CET credit, jurisdictions will need to report the following to NEIEN:

- *BMP Name*: Practice Name (Ex. **Table B1**)
- *Measurement Names*: Total Acres Treated (Acres) by the wet pond on which the CET system is located
- *Geographic Location:* Qualifying NEIEN geographies including: Latitude/Longitude; *or* County; *or* County (CBWS Only); *or* Hydrologic Unit Code (HUC12, HUC10, HUC8, HUC6, HUC4, State (CBWS Only)
- *Date of Implementation:* Year installed
- *Land Uses:* Turf Grass; Roads; Buildings and Other; Tree Canopy over Turf Grass; Tree Canopy over Impervious

Q5. Do I need to report this practice separately from my wet pond BMP, if it is a retrofit of an existing pond?

A5. No. If you have a wet pond that is retrofitted to include a CET system, this record would replace your existing BMP. Report the new CET practice as described in A3 above.

Q6. Are the practices cumulative or annual BMPs?

A6. This class of retrofit is a cumulative practice.

Q7. What is the credit duration for CET practices?

A7. Because of the importance of operation and maintenance, the duration of CET credit is 5 years. The credit can be renewed for the next 5-year period with a field inspection demonstrating that the CET is in good condition and is functioning as designed. Every 5 years CET credits need to be renewed.

Q8. Are any back-outs needed for existing systems?

A8. To the panel's knowledge, there are currently no existing CET systems in operation in the Chesapeake Bay Watershed.