Technical Requirements for the Reporting and Crediting of Riparian Forest Buffers in Scenario Builder and the Watershed Model

Presented to WTWG for Review and Approval: November, 2014

Background: In June, 2013 the Water Quality Goal Implementation Team (WQGIT) agreed that each BMP expert panel would 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 Riparian Forest and Grass Buffers Panel's recommendations will be integrated into the modeling tools including NEIEN, Scenario Builder and the Watershed Model.

Q1. What are the reductions a jurisdiction can claim for Riparian Buffers in the Watershed Model

A1. The expert panel recommended that the Phase 6 Model treat grass buffers in the same way as the Phase 5.3.2 Model. This means that each acre of grass buffer results in a land use change to hay without nutrients (or the comparable Phase 6 land use), and also reduces nutrients from upslope acres as described in the table below.

The panel recommended a slight change in the way forest buffers should be credited in the Phase 6 Model. The panel found that nitrogen reductions within the stream are greater along streams which are buffered on two sides rather than one. **This reduction is equal to 0.014 lbs of N per linear ft of restoration (on both sides of stream)**. The forest buffers will still be modeled as a land use change to forest, or the comparable Phase 6 land use.

Finally, the panel recommended that narrow grass and forest buffers receive a land use conversion credit (similar to that of tree planting), but no upslope benefit for both the Phase 5.3.2 and Phase 6 Models. Table 1 includes a complete list of available credits, and Table 2 includes the upslope efficiency reductions available in the Phase 5.3.2 and Phase 6 Models.

Table 1. Eligible Credits for Buffers in Phase 5.3.2 and Phase 6 Models

Practice Type	Qualification	Phase 5.3.2 Eligible	Phase 6 Eligible	Land Use Change	Upslope Efficiency	In-Stream Reduction
Narrow Grass Buffers	<35 ft wide on one or both sides of stream	Y	Y	Y	N	N
Grass Buffers	>35 ft wide on one or both sides of stream	Y	Y	Y	Y	N
Narrow Forest Buffers	<35 ft wide on one or both sides of stream	Y	Y	Y	N	N
Forest Buffers	>35 ft wide; Assumed to be one side of stream	Y	Y	Y	Y	N
Forest Buffers Double	>35 ft wide; Assumed to be on both sides of stream	Y	Y	Y	Y	Y

Table 2. Upslope Reductions for Forest and Grass Buffers in Phase 5.3.2 and Phase 6 Models	Forest Buffers/Forest Buffers Double			Grass Buffers		
Hydrogeomorphic Region	TN*	TP**	TSS**	TN*	TP**	TSS**
Appalachian Plateau Carbonate Non Tidal	54	42	56	38	42	56
Appalachian Plateau Siliciclastic Non Tidal	54	42	56	38	42	56
Blue Ridge Non Tidal	34	30	40	24	30	40
Coastal Plain Dissected Uplands Non Tidal	65	42	56	46	42	56
Coastal Plain Dissected Uplands Tidal	19	45	60	13	45	60
Coastal Plain Lowlands Non Tidal	56	39	52	39	39	52
Coastal Plain Lowlands Tidal	19	45	60	13	45	60
Coastal Plain Uplands Non Tidal	31	45	60	21	45	60
Coastal Plain Uplands Tidal	19	45	60	13	45	60
Mesozoic Lowlands Non Tidal	34	30	40	24	30	40
Piedmont Carbonate Non Tidal	46	36	48	32	36	48
Piedmont Crystalline Non Tidal	56	42	56	39	42	56
Valley and Ridge Carbonate Non Tidal	34	30	40	24	30	40
Valley and Ridge Siliciclastic Non Tidal	46	39	52	32	39	52

*Forest and grass buffers reduce nitrogen loads from four upslope acres.
**Forest and grass buffers reduce phosphorus and sediment loads from two upslope acres.

Q2. What should jurisdictions submit to NEIEN to receive credit for qualifying buffers in the Phase 6 Model?

A2. Jurisdictions should submit the following information to NEIEN to receive credit:
- BMP Name: Forest Buffer; Forest Buffer Double; Grass Buffer; Forest Buffer Narrow; Grass Buffer Narrow
- Measurement Names: Length and Width
- Location: Approved NEIEN geographies: County; County (CBWS Only); Hydrologic Unit Code (HUC12, HUC10, HUC8, HUC6, HUC4), State, State(CBWS Only)
- Date of Implementation: Year the project was completed

Q3. What should jurisdictions submit to NEIEN to receive credit for qualifying buffers in the Phase 5.3.2 Model?

A3. Jurisdictions should submit the following information to NEIEN to receive credit:
- BMP Name: Forest Buffer; Grass Buffer; Forest Buffer Narrow; Grass Buffer Narrow
- Measurement Names: Acres; Length (optional); Width (optional)
- Location: Approved NEIEN geographies: County; County (CBWS Only); Hydrologic Unit Code (HUC12, HUC10, HUC8, HUC6, HUC4), State (CBWS Only)
- Date of Implementation: Year the project was completed

Q4. Are these cumulative or annual BMPs?

A4. All buffer BMPs are cumulative, and jurisdictions should report data to NEIEN only for the year the project was implemented.

Q5. What is the credit duration for a riparian buffer in the model?

A5. The panel found that buffers are likely to last for 40-50 years or longer if properly maintained. Through the Verification Guidance, the Forestry Workgroup recommended that forest buffers be inspected at the end of a contract period. This is most typically 15 years. For this reason, the credit duration in the model for all agricultural buffer types will be 15 years from the date of implementation. Jurisdictions may extend this duration be submitting inspection and maintenance dates.