Appendix D. Technical Requirements for the Reporting and Crediting of Outfall and Gully Stabilization Practices in Scenario Builder and the Phase 6 Watershed Model

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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 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 Outfall and Gully Stabilization Practices (OGSPs) will be integrated into the Chesapeake Bay Program's modeling tools including NEIEN, Scenario Builder and the Watershed Model.

Q1. How are Outfall and Gully Restoration Practices defined in the Chesapeake Bay Watershed Model?

A1. OGSPs are an engineering approach to design a stable channel to dissipate energy that extends from the upland source to the stream channel. The new channel is designed and constructed to achieve an equilibrium state where future sediment loss is minimized or eliminated altogether.

Q2. What types of projects are eligible to receive credit in the Phase 6 Watershed Model

A2**.** OGSP projects should meet the following qualifying conditions to receive credit:

- The channel or gully slope below the source must exhibit predictive indicators for severe erosion or hill-slope failure and must be observed to be actively enlarging or degrading. These indicators are defined in Section 3 of the memo.
- The project should utilize a comprehensive approach to stream channel design, addressing long-term stability and resiliency of the channel, banks, and floodplain.
- Each project must comply with all state and federal permitting requirements, including 404 and 401 permits, which usually contain conditions for pre-and post-project assessment and post construction monitoring.
- Before credits are granted, OGSPs will need to meet post-construction stability criteria and successfully establish needed vegetation. Projects should maintain or improve existing native riparian vegetation in the headwater stream corridor to the extent possible. Projects should follow regulatory agency guidance regarding compensation for any losses of forest, wetlands and sensitive habitats within project work areas.
- Projects should avoid the use of pipe extensions or drop structures unless it can be demonstrated that they are needed to sustain channel stability and they do not introduce new aquatic organism passage issues.
- The project should provide functional lift within the project reach, typically as indicated by improvements of Levels 2 (Hydraulics) and when possible 3 (Geomorphology) of the stream functions pyramid (Harman et al , 2011).

Q3. Where are these projects located?

A3. The OGSP protocol was developed for projects located in the headwater transition zone, defined as the slope or channel that extends from an upland runoff source to the perennial stream network.

The Protocol may also be used as an alternative to Protocol 1 (the credit is not additive) only if it meets the following additional criteria:

- The project directly addresses a headcut, with severe vertical incision (progressive bed-lowering).
- The project MUST meet the more stringent stream restoration qualifying criteria outlined in the Stream Restoration Expert Panel report for Protocol 1, in addition to the qualifying criteria outlined in the OGSP memo.
- The project MUST meet the conditions of any and all state and federal permits.
- The project MUST NOT introduce barriers or challenges to aquatic organism passage or degrade instream habitat. Projects should always seek to improve passage of aquatic organisms and aquatic habitat where possible.
- Drop structures, extension of an existing storm drain pipes, stormwater collection features, and scour protection or other hard armoring techniques used in OGSPs are not eligible for credit in perennial channels.

Q4. How does the reporting of OGSPs differ from other Stream Restoration Practices?

A4. The reporting of OGSPs is the same as reporting for other Stream Restoration Practices. OGSPs represent a "Protocol 5" of the Stream Restoration BMP.

Q5. Which land use categories are eligible to receive nutrient and sediment reduction credit from conservation landscaping in the Phase 6.0 Watershed Model?

A5. Nutrient and sediment reductions for OGSP projects will be applied to the Stream Bed and Bank load, just like other Stream Restoration BMPs.

Q6. How much nitrogen, phosphorus and sediment reduction credit are associated with OGSP projects?

A6.

Table 1. Edge-of-Stream Pollutant Reductions for OGSP Projects

Protocol	TN lbs/ Linear ft/ yr	TP lbs/ Linear ft/ yr	TSS lbs/ Linear ft/ yr
Protocol 5 (OGSP)	Site-specific	Site-specific	Site-specific
Existing/ Non-Conforming	0.075	0.068	248

Q7. What do jurisdictions need to report to NEIEN in order to receive reductions for OGSP projects?

A7. The information that is required to be reported to the Chesapeake Bay Program to earn credit for stream restoration practices has been streamlined since the expert panel report was first published in 2013. The reporting criteria for OGSP are the same as the requirements for other stream restoration projects:

- *BMP Name:* Stream Restoration
- *Length Restored:* (ft)
- *Protocol(s) Name and associated unit amount* (lbs):
  - Protocol 5 TN:
  - Protocol 5 TP:
  - Protocol 5 TSS:
- *Land Use:* The default land use is Stream Bed and Bank
- *Geographic Location:* (see NEIEN for details)
- *Date of Implementation*: year the project was completed

Q8. Are the stream restoration practices cumulative or annual BMPs?

A8. The stream restoration practices are cumulative BMPs. This means that jurisdictions should submit all parameters to NEIEN only in the year the practice is implemented.

Q9. Can the OGSP Protocol be combined with other Stream Restoration Protocols?

A9. Protocol 5 cannot be combined with Protocol 1 (Prevented Sediment) within the same project reach. Protocol 5 can be combined with Protocols 2 and 3 in the same project reach, if it meets the conditions for hyporheic exchange and/or floodplain reconnection.

Dry-channel RSC practices installed in ephemeral stream channels can be credited as both a stormwater retrofit (Protocol 4) and an OGSP (Protocol 5). Protocol 4 reductions are subtracted from the pollutant load generated from upland impervious cover, whereas the Protocol 5 reductions are subtracted from the urban stream bank load.